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The Journal of the South Carolina Medical Association

OFFICIAL ORGAN OF THE SOUTH CAROLINA MEDICAL ASSOCIATION
OFFICE OF PUBLICATION — FLORENCE, SOUTH CAROLINA

VOLUME XLVIII APRIL, 1952 NUMBER 4

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Published monthly, by The South Carolina Medical Association, 105 West Cheves Street, Florence, South Carolina

Entered as second-class matter February 9, 1916, at the post office at Greenville, South Carolina, under Act of Mar. 3, 1879. Accepted for mailing at special rate of postage provided for in Sec. 1103 Act of October 3, 1917, authorized Aug. 2, 1918.

The Journal
of the
South Carolina Medical Association

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The Emotional Aspects of Pregnancy

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The purpose of this presentation is to direct attention to the emotional aspects of pregnancy, which form an important part of every day obstetrical practice. Much progress has been made in the last twenty years towards increasing the margin of safety in motherhood. Guess[1] has recently reported the rapid strides being made in the reduction of maternal mortality in South Carolina during the last decade. Accompanying this progress in the physical welfare of their patients, physicians are now showing an increased interest in the emotional factors, which contribute to the good health of their patients. As physicians we have unusual opportunities to direct patients in healthy attitudes regarding sex, marriage, childbirth and parenthood.

The human being is constantly making progressive adaptations to life with psychobiologic failures under stress and finding methods that can be employed to relieve such failures. Childbearing may confront the mother with many serious problems in psychobiologic adaptation and these should be evaluated with the physiologic and pathologic processes of pregnancy.

The personality and its development is an important consideration. "During the first year of life the infant necessarily exists in a state of complete dependence on those concerned with its care. As the child grows, inevitable frustrations and responsibilities are met, and it may develop deep-seated fears, distrusts and hostilities. Later, the adolescent must adjust to sexual and other social problems, which necessitates many self-imposed inhibitions and increasingly complex interpersonal adjustments that eventually determine his adult character. Generally, a healthy child raised by loving and understanding parents grows into a self-reliant, emancipated, and socially responsible adult. However, if the child's development is handicapped by physical diseases, or distorted by parenteral neglect, abuse of other adverse childhood experiences, it may develop into an unconsciously insecure, oversensitive, anxiety-ridden individual. Under further emotional or physical stress such an individual may then revert to childhood patterns of dependency, aggressivity, and social inadaptability of neurotic character. It may develop more complex and continuous disturbances of behavior as neurosis or psychosis. Any of the clinical varieties of these disorders may appear in obstetric practice."

Parental guidance and home environment, therefore, have an exceedingly important influence on the personality development of the maternity patient. There are the emotionally immature, who have had prolonged indulgence and protection by unwise parents, resulting in an incapacity to face realities, to make decisions, or evaluate personal responsibilities. They make poor mental adjustments to the unsatisfactory situations of life, and have poor endurance and make negligible personal sacrifices. In contrast are the mentally mature who face the problems of life unafraid. They are emotionally firmly anchored and meet and solve the issues squarely. Adaptations to joy and sorrow, wealth or poverty, disappointments and accomplishments, and the pain and anxieties of illness are made on an even keel. Understanding these basic psychologic fundamentals will aid the obstetrician in the approach to and alleviation of the maternity patient's fears.[2]

The personality is a composite of the patient's biologic make-up, external environment, and life history. Anything that would upset the balance between them would result in emotional responses commensurate with the change in pattern. Pregnancy is accompanied by great physiologic alterations in the biologic make-up and many mental stresses arise. Fortunately, the majority of women withstand these experiences well, but some few become emotionally ill.

The acceptance of motherhood is determined by past experiences at an impressionable age. Emotional reactions to pregnancy are a joy and pleasure to the patient who identified herself with a mother who looked forward with anticipation to a gratifying gestation. However, if the expectant mother's childhood memories of her mother's pregnancies were an emotional threat, then her own pregnancy may be characterized by fear, suspicion or resentment.

Various mental and emotional conflicts arise out of the dominant basic feminine instinct of reproduction. In those women who do not accept motherhood, there must be a subconscious reason.[3] The woman may fear she may lose her physical attractiveness or sexual

attraction or function. She may fear that this will affect her husband's affection for her both during and following the pregnancy. There is the fear in the elderly primigravida that many complications may arise, which cannot be treated properly. This is particularly important in women over 35 years of age. There is also the conflict of nursing their offspring, which may mar their physical appearance and require valuable time that they could otherwise spend on social engagements or for other economical reasons in the family. There may arise the conflict from the possibility of having mentally or physically defective children. This may be of particular importance, but often exaggerated in families where there is some hereditary tendency towards these abnormalities. There are emotional reactions, which may arise from instances involving more personal sacrifices, both socially, economically and physically, during a gestation. One can readily see how these mental conflicts during a pregnancy, which is not well accepted, may result in emotional reactions to the maternal instinct. As stated above, the emotional, mature woman will withstand these conflicts well and make a good adjustment to them. Conversely, the emotionally immature woman will develop any one of the diversified reactions, which will make the pregnancy more difficult for both the patient and the obstetrician.

Mating is an important aspect of pregnancy and the improper selection of the marital partner may result in many of the emotional ills during pregnancy. It is well to have two individuals who are essentially alike, both physically, mentally and emotionally. If there is an imbalance in these qualities, accompanied by economic inequalities and differences in religion, it may have a very definite affect on pregnancy. The physically compatible, emotionally adjusted and economically secure couple presents few problems in marriage, in reproduction or parenthood. Many of the emotional patterns and social attitudes acquired in unmarried life cause crucial disturbances when carried over into matrimony.

Emotional reactions during gestation may be variable as to whether the pregnancy is wanted or unwanted. Pregnancies as a result of planning and in which the fondest hopes of a woman have been fulfilled and the act of reproduction achieved; to her life is a blessing and a joy. The attitudes have been wholesome and the fears have been negligible. Where the pregnancy is unplanned or rejected, various degrees of emotional reaction results. Rejections, frustrations and anxieties are common. In the rejected pregnancies, the emotional responses may be so strong as to lead into severe physical impairments and emotional disturbances that may lead to acts of violence, abortion, or even suicide.

Illegitimate pregnancies may produce emotional reactions which should be considered. These are variable as to circumstances of age, location, as within the family household, organizations, as schools of learning, or in the older career type of women. The reactions, under any circumstances, may be one of acceptance, rejection or denial. In the first, personal sacrifice is only for the welfare of their infants, and these mothers will suffer the consequences of the moral law for the well-being of their motherhood. In those patients of the type where rejection is the emotional pattern, the woman will go at no ends to interrupt the pregnancy, including her own life. In the latter type of denial, to them the pregnancy never existed.

It is still a matter of conjecture today that emotions have some part to play in sterility. However, we see, from day to day, the effect that adoption has on some couples who have been sterile for several years. It is not uncommon to see them with one or more children, following adoptions. Similarly, we have seen the effects of a change in life situations which would break down some emotional barrier to pregnancy and result in a conception. Such an example would be a business executive under constant drive and mental strain taking a long vacation or Caribbean cruise. Instances of psychologically prepared patients for pregnancy have resulted in parenthood, in couples who have otherwise been sterile. We have seen good therapeutic results for the infertile patient following a thorough physical examination and a word of assurance regarding the complete normality of the genital organs. The use of mild hypnotic, relaxing and antispasmodic drugs have often been resorted to and are beneficial to the sterile patient.

Pseudocyesis[4] should be mentioned as a psychic reaction that may present the most variable reactions that we find in the practice of obstetrics. It may occur at any age from 7-80, but more frequently in the child-bearing age. The etiological factors are a wish for a pregnancy or a fear of pregnancy. There is some strong biologic, sociologic or economic need for a pregnancy, and physically the body adjusts to this need. Similarly, a fear of pregnancy may, under certain conditions, produce the same emotional reaction

Emotional responses to pregnancy may be influenced by certain fears. The fear of complications that may arise during or following pregnancy, and the fear of death, are frequent causes of mental unrest. Various superstitions still exist as to "marking" the unborn child by such experiences as seeing or being frightened by reptiles, witnessing some accident, an event occuring at some particular time, or unreasonable cravings for certain types of food. Very often there arises the fear of the effect of threatened abortion on the development of the offspring. The results of some of these may be real and yet some unfounded. Some of the fears are reasonable, as to the transference of some venereal disease to the offspring, or the effects of some virus disease on the normal development of the unborn child. There, naturally, exists the fear of pregnancy accompanying some preexisting disease as tuberculosis, diabetes or

cardiac impairment. Of more recent date are the fears originating from the Rh factor, and the possibilities of producing a normal pregnancy, if there is Rh incompatability in blood between the marital partners. The fear of anesthetics and which is to be preferred in each selected case, produces various emotional responses that the obstetrician can readily alleviate. The articles in women's magazines many times do not explain the various conditions to the patient's understanding and kindles the fears that until that time may have existed only quiescently.

The mother-child relation is an important emotional aspect. During the nine months of gestation the child is an integral part of the mother. If the mother is allowed to handle the baby frequently shortly after birth, the transition between intrauterine and extrauterine life is less marked. It also allows the mother to become more intimately related with the child in this new capacity. There is an emotional bond of love in mother-child relationships. If the mother has confidence that her love and the things that she does for her baby are the best that the baby can have, then there is a mutual understanding of love. Not to be forgotten is the father. The mother's emotional reactions to the child are influenced greatly by her relation with her husband. The child's arrival creates the family triangle and this new situation requires that the marital partners readjust the emotional equilibrium to which they have become accustomed.[2]

In obstetrical care the physician should have complete confidence of his clientele. He should be the therapeutist for her ills during gestation, the accoucher at the time of delivery, and always the bulwark against her fears.[5] The mother should be left with the feeling that she has done well and that she is ready to have another at a later date.

In closing, I would like to quote from Park's address before the South Atlantic Association of Obstetricians and Gynecologists. "In obstetric care the patient's psychic reserve is as important as her physical capacity. Symptoms of nausea and vomiting, multiple vague complaints, compulsive appetite, demands for complete narcosis, revulsion at suggestion of breast feedings, sleeplessness and morbid interest in details of pregnancy usually suggest degrees of rejection to the role of motherhood. Recognized early these symptoms permit time for turning the patient's thoughts to a more positive and pleasant attitude.

Many of the circumstances which make pregnancy and childbirth difficult can be corrected through language. By talking good health we can prevent much ill health. We have all witnessed the mental anguish of the patient who has been told that she should not conceive, or that she should not have another baby. In these days of modern medicine and surgery there are very few indications for a physician to try and limit a family verbally. Another unpleasant conditioning process is our tendency as gynecologists and obstetricians to compare pelvic tumors with the size of a pregnancy of 7 month's duration. This is particularly disturbing to the infertile patient and to the maiden lady. A prospective mother is not encouraged by the unpleasant knowledge that her pelvis is so contracted that it will not permit the passage of an object of a certain diameter, let us say a fair sized orange. The mental scars of an unpleasant pregnancy persists long after the episiotomy has healed.

While we must maintain a diligent respect for the serious complications which can occur in pregnancy, it is our duty, responsibility and pleasure as physicians to convey a feeling of security, happiness and well-being as free from all fears as possible, in the new mother-to-be. Fertility alone indicates some degree of help. A healthy pregnancy can be used as a growth producing, beautifying physiological process with a goal objective. In no other field of medicine does a physician deliver such a prize possession as a newborn infant.

It will take such time and thought to establish such substitutes for such words as "labor pains," and "rupture of the membranes." We can talk about contractions rather than pains, about first stage lying-in rooms rather than labor rooms, about drainage or letting off fluid, rather than rupture of the membranes. But of greater possible importance is general adoption among the medical and nursing profession of less frightening, wholesome attitude toward the complete process of pregnancy, childbirth and parenthood."[5]

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Basic Facts Concerning Suicide

By

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Since the earliest days of recorded history the phenomenon of suicide has not ceased to baffle mankind. Though studies of suicide have been inadequate and authentic records are incomplete and comparatively few in number, this act of voluntary and intentional self-destruction challenges the best efforts of sociologists, physicians and psychologists today, for suicide continues to be a menacing social problem both national and international in scope.

The pages of Holy Writ record numerous instances of suicide, and chronicles dating back to earliest recorded history reveal significant data pertaining to both the method and the man. It was not, however, until two hundred fifty years ago that the term "suicide" (from two Latin words, *sui* meaning *oneself*, and *caedo* meaning kill) came into use. Throughout the centuries this voluntary act of killing has evolved through various stages and connotations with the result that even today its status is still misunderstood. In some sections of the world this act is demanded and condoned among primitive tribes, whereas in other sections even the attempt to suicide is punishable by imprisonment or possible confiscation of property. In other countries, as in the United States, for example, only four states regard attempted suicide as a criminal act.

Clarification of numerous aspects of this subject will entail a profounder research, but this paper will attempt to set forth a few valuable findings and to note a few existing fallacies.

Incidence of Suicide Today

At present the ratio between suicide and homicide is two to one, respectively. Though this average obtains, it is also noted that in areas where a low rate of suicide is found, the rate of capital crime rises appreciably, as is seen in the islands of Corsica and Sicily, for example.

Though suicide constitutes one of the major causes of death, and though its incidence is equivalent to the combined incidence of five of our most common communicable diseases, it nevertheless represents a wide fluctuation with the passing of the years. Generally speaking, its incidence has decreased during times of war and prosperity and increased during economic depressions and great national shifts or movements in which personal adjustment proves difficult as, for instance, the after-math of war or stressful transitions of religious movements.

Statistics of reliable life insurance companies reveal the fluctuation in the United States (based on one suicide out of each 100,000 inhabitants) as 16.0, 11.9, and 13.6 during 1910, 1922 and 1930, respectively. In the year 1932, the peak year, when the world-wide economic depression was at its bottom, the ratio stood at 17.4 while in France it reached 20.6 and in Germany, 29.2. It has been estimated that in 1933, throughout the world 310,000 suicides were recorded. This figure represents an excess of 6,000 deaths over the total dead and missing of the United States Armed Forces for the duration of World War II. In 1937, in this country the incidence stood at 14.9 for every 100,000 population.

Areas in which the lowest death rates obtain include Eire, Northern Ireland, Scotland, Norway, Italy Bulgaria, Lithuania, Spain, Canada and the Netherlands. Throughout the past four decades, the highest ratios have obtained in Germany and France. At the present time within the United States suicides in hospitals and within the communities themselves account for one-half as many fatalities as do motor vehicle accidents. In New York City alone it is estimated that six suicides take place during every twenty-four hour period. What with these deplorable statistics, it can be readily seen that suicide is a universal phenomenon, a baffling social and economic problem which continues daily to disrupt community and family life.

Etiology of Suicide

Why do people suicide? Not to everyone is life so beautiful that the world cannot, in the words of Edna St. Vincent Millay, "be held close enough." Many there are who are continually obsessed with the desire to terminate their earthly existence and thus make a final regression from all reality.

It is believed that to practically everyone, normal and abnormal, suicidal ruminations come at some time in life. By some these meditations are easily cast aside; by others they are impulsively translated into action—successful or unsuccessful; and by still others they become an obsessive passion in a struggle for non-existence.

The writer has previously referred to suicide among primitive tribes. In spite of the belief that the lower the cultural scale, the lower the incidence of suicide, it is true that numerous suicides have continued to occur among primitive peoples because of the prevalence of gross superstitions and adherence to ritualistic customs. For instance, fanaticism in religious practice in India once decreed the burning

of Hindu widows on the funeral pyre of the departed mate. As a means of escape many widows resorted to suicide. Among Central American Negroes, death by poison is frequently resorted to by an innocent survivor who fears being accused of responsibility for the death of her mate. Many despised, penniless prostitutes in Mexico also turn in despair to suicide. By ripping open their bowels many Japanese formerly turned to self-destruction through hara kiri. Oftentimes savages wishing to avoid capture or suffer torturing indignities have resorted to death at their own hands. Rather than submit to forced marriage with undesirable, impotent old men, the females among the South-African Negroids frequently resort to hanging themselves.

Aside from those who were moved to suicide because of religious beliefs or superstition, many there were in the pre-Christian era who entertained philosophical attitudes in which suicide was condoned. Sages including Seneca, Cato, Zeno, and thousands of others contended that the mode of death was a matter of personal choice and thus selected suicide. Later, with the acceptance of Christianity, nations developed different conceptions of life and death; and gradually the church was instrumental in effecting a decline in self-destruction of man's body, the temple of the Holy Spirit.

It should also be noted that during the early days of recorded history, often at the command of a king, emperor, or other ruling authority, many subjects submitted to death at their own hands. Throughout all time many imbeciles, it should be noted, have brought destruction upon themselves, oftentimes accidentally.

In addition to the etiological factors of suicide named above, it should be noted that several innovations have caused researchers to view the universal problem of suicide in a more satisfactory manner. The innovations herein referred to have been made possible by the role assumed by both church and state as each concerned itself with this perplexing menace, also by the unparalleled advance occasioned by scientific investigation, particularly in the fields of psychiatry and psychopathology.

In further enumerating the etiological factors of suicide, the writer would remind that in some areas twice as many suicides occur as are actually reported, such failure to report being due to an attempt on the part of the physician to cover up the act. He would also remind that all so-called suicides are not genuine, some having been intended for attempts only, but accidentally proving successful.

Mental disorders are frequently the cause of suicide. The act of self-destruction is reported among patients having all types of mental diseases, organic and functional. Those disorders in which the highest incidence of suicide occurs, however, are the depressive psychoses and the schizophrenias. Though some authorities hold that psychoneurotics do not suicide, this generalization is not accepted by others. Oftentimes the psychoneurotic develops a depressive psychosis on the background of his psychoneurosis and resorts in some instances to suicide.

In patients having involutional melancholia, the suicidal symptoms are very severe until convalescence has begun, but once having begun, it is followed by a rapid recovery with small likelihood of relapse. Melancholia, it might be said, is undoubtedly the most important factor in causing suicide, the act itself being frequently committed during the period of depression in cyclic mental illness. Probably more than one-third of the cases of suicide are traceable to this form of mental condition. Suicides often take place during the depression stage following drunkenness, also during symptomatic depression observed in general paresis, neurasthenia, hypochondriasis and epidemic encephalitis.

Any form of mental confusion such as acute delirium, pellagra, delirium tremens, or cerebral tumors may lead to suicide.

A tendency toward suicide is found sometimes in families. In the unconscious of the offspring of a suicide there seems to exist a feeling of guilt; and hence at approximately the same age at which a parent committed suicide, one or more of the offspring for successive generations may follow the suicidal pattern.

Suicides have been known to result from the loss of a loved member of the family, sexual abnormalities, feelings of inferiority, disappointment, jealousy, revenge, loneliness, disgust over menstruation, miscarried ambitions, physical illness, financial losses, discontent over occupations, phases of the moon, military service, distasteful climate, domestic strife, unwanted pregnancies, thwarted love affairs, nostalgia, power of suggestion and the fear of discovery of some actions inconsequential in themselves but serving as a burden to the mind.

A large number of these causes for suicide will be recognized as precipitating ones only. When people appear to turn to suicide because of frustrated ambitions, financial disabilities and similar causes, scientists entertain no doubt as to the existence of a deeper underlying cause. Every suicide has a motive. The eminent Emil Kraepelin has estimated that 33 per cent of the suicides were psychotic. Esquirol also believed that suicide was attributed to a special form of mental disease. Today, however, during this psychotherapeutic age, neither statistics nor experience supports the belief that suicide is evidence of mental derangement. The oft-repeated verdict that an individual suicided "while temporarily insane" is traceable to a gesture of kind consideration for the family who prefer the stigma of temporary mental derangement to that of self-destruction.

The fact that an impulse to suicide is a conspicuous

symptom among many who are mentally disordered furnishes no conclusive proof that all who suicide or attempt suicide are abnormal. The large majority of suicides, in fact, are not certifiable as mentally diseased, and law holds every man sane until he can be proved to the contrary. In England the term *suicide* is used with reference to the act when it is committed only while the deceased was of unsound mind. Otherwise the same act is known as *felo de se;* and because such an act implies commission while the individual was of sound mind, penalties are exacted against the estate of the deceased.

In view of the finding that many of the causal factors of suicide are only precipitating, and in view of the danger that suicide is ever present in some mental disorders, to what, one might ask, is genuine suicide actually attributable?

Dr. G. R. Jameison contends that the psychosis does not represent the actual suicide drive, for suicide represents one's failure to handle conflicts between the conscious social adaptation and the unconscious asocial strivings. Jameison considers the motives for suicide on the basis of infantile organization as a very important factor. He stresses the importance of studying the ingrained nature of a person to determine whether he early showed a tendency to passivity or aggressiveness. Often during growth the inherent disposition is covered over, and early tendencies or adolescent ones of the child are later given free rein when the patient becomes psychotic. It is often seen that in some personalities there seems to be a predisposition to return to psychologic levels of immaturity. Thus it can be seen that a glance into the childhood history of suicidal patients reveals the fact that many have experienced difficulty in dealing with hostile impulses and aggressiveness. Many likewise have experienced feelings of guilt and the need for punishment. It is interesting to note that when the latter type make suicidal attempts which are detected in time, the patients suddenly begin to improve, the depression seeming to have lifted itself abruptly. Perhaps this condition prevails because the patient realizes that his guilt has been expiated through his attempted suffering.

Besides these types of individuals in whose personalities there are recognized specific infantile and preadolescent tendencies, it has been noted that others who show suicidal tendencies are people with temperaments characterized by day-dreaming and by idealism, also those who mature somewhat late and are backward in their development as well, as those who tend toward self depreciation and self abasement. To this category might also be added the unbeliever and the atheist, neither of whom entertains any dread of a future life.

Post mortem examinations and psychosurgery have revealed the fact that anomalies in the skull (such as irregularities of the surfaces, greater sharpness of ridges and angles, overgrowth of lymphoid tissue of the thymus, an over-sized brain and so on) are more often detected in cases of suicide than in normal people who do not attempt suicide.

In an effort to explain the etiology of suicide, the writer has set forth some important findings but maintains that probably the basic cause of suicide is still unknown. He is prone to believe, however, in the words of Morselli that " . . . the progressive increase of suicide is not possible to explain otherwise than as the effect of the universal and complex influences to which we give the name civilization." Suicide has been defined thus as a "failure in adjustment at this high level of adaptation." It represents a denial and shirking of the duty of the individual as an integral part of the universal whole.

It is believed that the suicide belongs to a definite type of personality not necessarily psychotic but potentially so.

Types of Suicides

Because so-called suicide occurs in various settings and represents various types, it will be well to consider special categories.

First of all might be mentioned the *malignant* suicide. This type is found among those individuals who are typically melancholic and who, once having made an unsuccessful attempt at self-destruction, must thereafter be considered suicidal risks and furnished with proper supervision. Ideas of self-destruction grow progressively more insistent to the patient who contemplates suicide as the only solution to an intolerable situation. If one attempt fails, the patient is almost sure to follow it with further attempts, for so intent is his purpose of suiciding that every moment he continues to contemplate the act and to concentrate upon it with "gun-barrel mental vision." Regardless of his past interests, he now appears oblivious of everything except his solitary, overwhelming intention to terminate life and to make a final retreat from the vicissitudes of living. In the event that he is frustrated in his attempt, he is likely to vent his wrath upon the frustrater, to express great disappointment, to grow more irritable, even violent, assaultive, homicidal, and finally amnesic in some cases. Those patients who later recover admit that the intensity and the urgency to suicide which had formerly tortured them is practically inconceivable to the normal mind.

Such malignant types of suicide are of course dangerous to themselves and to the community and hence demand constant, alert supervision. Even in the best institutions "accidents" occur occasionally, regardless of the excellent supervision; and a patient may injure himself seriously or even destroy himself. Dr. Jameison stresses the fact that it is impossible to restrict completely every person about whom the authorities entertain a suspicion of suicide. Nor indeed

would total restriction be wise, for it would then be impossible to give institutionalized patients the maximum treatment due them. The eminent psychiatrist, Clarence B. Farrar says:

"Constant supervision in the case of such a patient self-evidently means every second of every minute of every hour in the twenty-four. Even then the issue becomes a kind of contest in which patient and nursing personnel are matching wits. That the odds in many cases are against those charged with the safety of the patient is understandable. Besides the ever-present element of human fallibility there is the vast discrepancy in the absorption of mind—the preoccupation—on the two sides. The contest is between a mind with just one thought and purpose morbidly intensified and that of the nurse, which like any mind may find it difficult to focus so intently and continuously through every moment of her tour of duty and without distraction on the single objective of uninterrupted supervision. If there is a momentary lapse of attention, it is less likely to be on the part of the patient. In one case the patient asked the nurse to bring a glass of water from the adjoining bathroom. 'Please let it run cold,' he said. While the water was running cold, whatever time that may have been, he strangled himself with a suspender strap fixed to the bedpost by simply rolling out of bed. You ask how it could happen. Well, it happened."

The type of personality who is considered such a suicidal risk is he who is inclined to self-depreciation and self-blame, who fears that because of his pronounced insomnia, he is going to "lose his mind," who worries excessively over his physical health, who fears that he might lose control of himself and possibly harm other people, who is seclusive, restless, agitated, tense, anxious, worried and who suggests the picture of hopeless despair.

Jameison in tabulating the results of ten patients hospitalized because of depressive psychosis noted that one of these patients suicided three days after leaving the hospital and the remaining nine had taken their lives within only five months' time. Thus would he exhort relatives against removing suicidal patients from hospitals against the advice of the therapists. He would also impress upon the minds of relatives that occasionally a patient appears suddenly to improve just before he suicides. This symptom is often misleading and the relative secures the patient's discharge though the therapist knows only too well that oftentimes the patient assumes a totally different—yes, even notably improved appearance—only because he thinks that he has finally and carefully consummated effective plans for carrying out his suicide.

Dr. Jameison has likewise warned against the danger of mood swings in manic-depressive reactions. Some of these patients experience manic phases and depressive phases; but in the short duration between these phases, the patients appear to be well. Unless relatives understand the longitudinal picture of this mental disease, they are likely to insist upon the discharge of such a patient at the most inopportune time, for if the patient has undergone previous attempts at suicide, any opportune circumstance for repeating the attempt is likely to prove tragic. Oftentimes depressed patients with circular reactions, after their depressions have lifted, tend to complain about their hospital environment and in projecting their inner distress thereon, contend that the hospital restrictions are prolonging their illness. Because at this stage the patient appears improved, as far as his depressive features are concerned, his relatives agree to remove him; but actually he is potentially more suicidal than he has been at any other time. Such mistaken moves frequently result in tragic consequences, as such patients usually survive only a matter of days, weeks or a few months at most. It is often difficult to convince relatives of the risk incurred in such matters seen repeatedly by the therapist; hence the dire need for convincing the public that all mental diseases are not alike.

Another type of suicide might be termed the *compulsive* kind. Into this category fall those unfortunate individuals who feel as if they are driven to a commission of the act. Frequently the patient feels that accusing voices are urging him to kill himself. Many schizophrenics and some individuals showing schizoid traits, as well as seniles, arteriosclerotics, some paranoids and paretics are potential suicides of compulsion.

There is also an *impulsive* variety of suicide. Those who suddenly seek revenge or feel grossly disadvantaged or ill-treated, as well as impetuous, emotionally unstable lovers engaged in quarrels, fall into this category.

The *auto-suggestion* group has been previously referred to as those who, because of a predisposition to suicide, follow the example of another member of the family who had suicided. It is noted that during a fifty year period, twenty-three suicides took place during four generations of the Briggs family in Connecticut.

The *anhedonic* suicide is one who, finding no value or interest in life, resorts to self-destruction because of sheer boredom.

Occasionally *physiologic* suicides are also encountered. These are the individuals who, because of the severity of physical ill health, discouragement and disappointment, no longer experience any joy in life. They long for death and even resolve to die. It appears that there actually are many such patients who, because of a somatic diathesis, are able to carry out such a resolution. Many sufferers of cardiovascular disease, lung disorders, diabetes and abnormal nerve conditions fall into this category.

Perhaps the last well-known type might be termed the *juvenile* suicides. Fortunately, suicide in children is comparatively rare though there are found some who, when they experience unhappiness, defeat and misery, seek relief from their discomforts through self-destruction. Included in this class are some psychopathic individuals, some individuals of sensitive temperament, some who have a predisposition to suicide and some who are psychologically unstable. It is believed that children follow their inclination to suicide at the height of emotional release and therefore impulsively (and oftentimes, suddenly) attempt suicide. Some children have been known to attempt suicide because of a desire to be with a deceased loved one. One little boy recently killed himself because, as an antemortem note signified, "I got a 'D' on history and I could not stand another whipping." Another child hanged himself in the barn because he had seen a lad do the same in the motion pictures. Another girl swallowed lysol because she was uncommonly tall for her age.

Closely related to genuine suicide are attempts which sometimes prove to be spurious. These we might call *suicidal gestures*. Some such gestures, not originally intended to be serious, are sometimes accidentally successful and hence very tragic. Usually they are designed for the purpose of attracting attention or sympathy, or for securing revenge.

Dr. Karl Menninger has stated that, psychoanalytically considered, every genuine suicide should involve three elements, dying, killing, and being killed. He postulates that the absence of any of these three factors disproves the suicide, thus labeling the attempt a *gesture* instead. Capt. George N. Raines (M. C.) U. S. N., calls attention to the fact that the age is a rather reliable determining factor in such an uncertainty, and adds that if the suicidal gesture occurs in mid-life or late life, it has all the warning qualities of an actual suicidal attempt; but if it occurs between the ages of 20 and 35, it may have no bearing whatsoever as an indicator of actual self-destruction.

Basic Factors in Suicide

The following miscellaneous findings will, perhaps, serve as pertinent pointers in a basic consideration of suicide:

Regarding the *methods* employed in self-destruction, it is noted that the personality of the individual has some connection with the method employed for the appropriate end-reaction of a psychic conflict. Also significant are suggestion and availability of means. The methods might be thought of as active (or aggressive) and passive (or reception). As a usual thing, though not consistently so, women employ the passive methods, such as poisons, gas and drowning. Men employ the active ones, including cutting, shooting, burning (and electrocution), jumping from high altitudes, hanging and voluntary starvation. Usually the individual continues to employ the same method which he originally used. In hospitals where restrictions are numerous, the successful method is generally asphyxiation through hanging. Scarfs, cords, belts, handkerchiefs, ties and various articles of linen are used. Sometimes hemorrhaging from self-inflicted wounds also brings on death.

Regarding *professions and occupations*, it is believed that suicides occur more frequently among doctors, lawyers, soldiers, other professional men, commissioned officers and college students. Less frequently they occur among monks, priests and those having occupations out-of-doors.

The Negro, as a *race*, is not given to suicide. Attempts at suicide are made among Negroes, but they are only rarely successful. It is postulated that perhaps because of a comparative absence of melancholia (the most telling factor in suicide) among the Negro, this condition prevails. It is also observed that self-mutilation and castration practices—bearing a close correlation with suicide—are also infrequent among Negroes. In mulattoes (or mixed Negro and Caucasian blood), it is observed that the greater the mixture, the greater is the tendency to depression.

The *age* peak at which suicides take place is 45 years among males with that for females slightly lower. Though large numbers of females attempt suicide, they are not nearly so successful in their acts as are males. The ratio for the two sexes stands at three suicides for males to one for females.

The *time* of day at which most suicides are perpetrated is usually during the early morning hours generally between 5:00 and 7:00, though others occur during the afternoon and evening hours as well. Suicides are somewhat rare in the middle of the week, generally occurring in the community on Sundays and Mondays. Usually the highest incidence occurs in the month of November. The trend descends to a low in January, rising suddenly in February. Another rise occurs in June, being maintained through July and August.

It is noted that the forces of religion act as a deterrent to suicide. Long has there existed the opinion that a higher incidence of suicide prevails among Protestant than among Catholics though this is still a matter for further investigation and clarification.

Preventive Measures

The writer herewith presents in outline form some preventive measures to be used with potential suicides within both the community and the hospital.

1. Moral example and persuasion are efficacious in certain cases but are of no value when the intelligence of the patient is no longer intact. Some incurable patients who are perfectly lucid may be benefited by these measures; but in cases of depression and in

delirium the physician will lose time if he resorts exclusively to psychological arguments.

2. Measures of mental hygiene are more important.

a. The patient's hours from morning until night should be divided between *physical exercises, meals, distractions* and *moderate work,* and he should be obliged to follow this discipline to the letter.

b. He should not be left to himself.

c. The interest taken in an interesting occupation has often cured patients of their old ideas of suicide.

3. Special sanitarium is advised in cases where the form of treatment outlined above fails.

4. No sedatives should be prescribed to patients left at liberty as they may use these drugs to poison themselves.

5. Isolation should be used as an emergency method.

a. in cases of psychopaths who have attempted suicide.

b. in epidemics of suicide.

c. in hysterical patients who threaten to kill themselves.

d. in the case of hypochondriacs.

6. It is very exceptional that treatments at home can replace isolation in a hospital. If kept at home, he must be placed in a room and watched continuously day and night.

7. Before giving drugs it must be remembered that physical and moral hygiene play a great part in the treatment of these patients.

a. rest in bed.

b. quiet; semi-darkness.

c. baths, massage and Swedish gymnastics.

8. If ideas of suicide are due to some intoxication such as alcoholism or general paralysis, the proper treatment should be instituted at once.

9. If the cause remains obscure but there are signs of endocrine disorders, opotherapy becomes necessary.

10. There is often a disequilibrium of the sympathetic system in these patients, and this should be treated.

11. Opium gives good results in all cases. Laudanum in progressive doses or morphine in acute crises has an excellent sedative action. The toxicity of morphine can be reduced by adding scopolamine. During the last few years many new alkaloids have been prepared which are not very toxic and which are not habit forming.

Therapeutic Measures in Special Sanitarium

1. Patient is undressed and searched on admission.

a. All weapons, knives, scissors, needles or pins should be taken away from him and the same is true of all drugs.

b. Clothing should be reduced to a minimum, and any article of clothing which can be transformed into bonds such as suspenders, lacings, belts, soft collars, neckties, stockings or handkerchiefs should be removed.

2. An inspection should be made after each visit of his relatives.

3. Patient should be placed in bed under constant watch of a nurse. He should be allowed to rise only to go to the toilet.

Under these conditions there is no danger of suicide by means of firearms or knives, but the same is not true with regard to hanging. A patient may hang himself in bed unless carefully watched, under the bed clothes. In some cases the nurse has carefully watched her patient during the entire night and has found him hanged in bed in the morning.

4. The patient sometimes endeavors to commit suicide by refusing food, by ingesting foreign bodies or by means of drugs. Ingestion of foreign bodies can scarcely occur if the patient and his surroundings have been properly searched.

5. Meals should be served to the patient in bed and should not include any dangerous food such as fish containing bones. Meat should be cut in advance so that the patient will need only a spoon.

6. Hunger strikes can be treated by nasal feeding.

7. Poisoning from drugs can be avoided if toxic substances are ordered very infrequently, and if the patient is watched while the drug is being given. Care should be taken that he swallows the drug, and does not save it until a poisonous dose is obtained.

a. For this reason it is best to treat the patient by hypodermic injection.

b. Tablets or pills which can be concealed in the corner of the mouth should never be given.

8. Medical treatment, of course, varies with etiological factors.

Three Correlates of Suicide

Before closing this paper, the writer would like to mention briefly a few correlates of suicide—self-mutilation, castration and homicide.

Very often individuals who are prompted by the same motives present in potential suicides turn to *self-mutilation.* In an effort to atone for past misdemeanors, shortcomings, guilt and sins, some in-

dividuals inflict infirmities upon themselves by inhaling or imbibing caustic substances, fracturing heels, severing hands, plucking out eyes, destroying teeth, pulling out the hair, or artificially inducing abscesses, tumors, throat and lung ailments, as well as skin infections. Sometimes these mutilations are carried out for the purpose of gaining sympathy or attention; sometimes for expiation; and sometimes through a willingness to sacrifice a member of the body rather than face the uncertainties of future through suicide.

In time of conflicts as the Second World War, for example, self-mutilation is often closely correlated with mayhem (the hurt to an individual's body, by which hurt that individual is rendered less able in fighting, either to defend himself or to annoy the foe). Self-mutilation, at such periods is not easily distinguishable from malingering. Many individuals evidencing shyness, fear, insecurity, anxiety, irritability and similar emotional reactions to combat, also many psychopathic personalities, resort to so-called malingering though in frequent instances true identification of the act is practically impossible. Psychiatrist Robert L. Garrard recalls that during the last World War, of three hundred hospitalized cases of self-inflicted wounds, only sixteen failed to pass the investigation of the Inspector General's Department and as a result were court-martialed. He reminds also of the difficulty in distinguishing among injuries due to carelessness with no conscious desire for self-injury, accidental injury, and purely pre-meditated cases of self-mutilation.

Not infrequently also are cases of *castration* encountered among personalities in whom auto-sadism is a predominant factor. In an attempt to castrate themselves, potential suicides and others frantically attempt to tear away the genitals, to bind tightly or even to sever entirely the penis. Dr. Garrard relates the following case in the *Edgewood Medical Monographs* (1950).

"He expressed hostility and resentment toward the Army, his draft board and all authority, saying he hates uniforms and trusts no one. He said his trouble began when the chairman of his draft board refused to release him so he could join the Air Force and earn enough to support his wife who was then three months pregnant. While in the Army he says he was very despondent, being away from his wife, and he began to mutilate his nipples and penis. He took a razor blade and split the penis above and below the meatus about ¼ inch, so that the glands were partially bifurcated. He said he could not get a pass or furlough to be with his wife for her delivery. Commenting on the mutilation he said: 'It all started because I could not be with my wife for her delivery.' As a matter of fact he went AWOL and was at home when she delivered. On returning to his post he felt it was most unjust when he was shipped to Cape Cod, Massachusetts. In less than two years he was separated on a medical discharge with a diagnosis of anxiety neurosis. He was so hostile toward the draft board chairman that he did not return to his native state, fearing that he would run into him and kill him. Even yet he says he turns to drink when he thinks how he was treated by the draft board. During 1945 his left nipple and breast became swollen and a nodule developed, requiring amputation. This evidently was brought on by long-continued self-mutilation of the nipple and breast. Before leaving the Army, patient had decided he was not fit to be a parent. In 1946, while in New Orleans, he persuaded a surgeon to sterilize him. He has continued to mutilate his right breast by pushing hairpins into it and forcing his wife to chew on it during intercourse, so that it is now enlarged, indurated and has been infected several times. Amputation has been planned and postponed, due to the infection. The wife of this patient reports that they are sexually compatible, though patient talks of wanting to be a woman and always wants her to take the initiative and to bite and punish him in order to make his orgasm more complete. He prefers fellatio to conventional sex relations. She reported that he pushes needles and hairpins into his nipples, to 'get a sensation' and he wants to pierce her nipples. He also wants to pierce the lips of her vagina and put rings in them. This veteran is addicted to alcohol and at times becomes abusive and destructive in the home. He has spent considerable time in a veterans hospital during the past few months."

Very closely related to the suicidal act is the *homicidal* act. It has been noted that in England fully 33⅓ percent of the murderers terminate their lives in suicide. Daily accounts are recorded of a homicide who was responsible for one, two or sometimes many more deaths before he terminated his own life or at least attempted to do so. Such, within recent times, was the case of Howard Unruh who murdered thirteen victims at one fell swoop and then turned the gun upon himself in an attempt which was intercepted.

The Problems of Suicide—a Challenge to Research

Thus far this paper has sought to show that suicidal tendencies are present in practically all of us, but our reactions to the trends differ markedly. In fact, most of us escape suicide; nevertheless the incidence continues so great that self-destruction is still one of the leading causes of death. In the field of psychiatry, it is actually the leading cause except in the oldest age groups. Psychiatrists state that each day they witness aborted or frustrated attempts. Occasionally, however, as has been stated, an attempt in a well-ordered institution inexplicably ends in tragedy. Psychiatrist Russell A. Anthony, writing in the *Cyclopedia of Medicine, Surgery and Specialties* (1951), says: "Unfortunately there are no rules of thumb in preventing suicide . . . Even in the best types of psychiatric hospitals with constant supervisions patients have been able to commit suicide."

Today much research is needed into cases of suicide

and its correlates. What should be done for the sensitive little girl who, because of the disfiguring birthmark on her face, prefers to "end it all," or for the over-grown six and a half foot sixteen-year old lad who is unable longer to stand the taunts and jibes of his school mates? What can prevent the useless deaths of frustrated Japanese maidens who fling their small bodies into the raging inferno of a Fujiyama? What measures can prevent the slow, agonizing death of a bichloride of mercury victim? What is the best method for treating the individual who swallows spoons, screws and safety pins, or frantically batters his head against walls and attempts to drive nails into his scalp? How can one deal with speeding motorists (who, in reality, are *concealed or unconscious* suicides), who operate vehicles at an incredibly fast speed toward deliberate accidents? What should be done to safeguard the welfare of the sufferer who commits suicide during a brief period of delirium only characteristic of his curable malady?

Dr. Nolan D. C. Lewis contends that of all pathologic processes in the field of psychobiology, suicide is the most profound, hence the very pressing need for a more intensive research. Though, as has been noted here, every suicide has a motive, for some acts of self-destruction, it is impossible to ascertain the motive. It is agreed, however, that the increase in suicides can not be attributed solely to psychic and physical distress. It must also be recalled that many cases of suicide occur outside the hospital walls, and often these cases are never studied. Though many such cases had been formerly seen by a physician, he had not perhaps grasped the significance of the situation which later terminated in tragedy. Hence arises the necessity of recognizing dangerous warning signals such as suicidal preoccupations, development of morbid thoughts and reactions, pronounced hypochondriasis, sudden improvement in certain types of mental illness, great concern over insomnia, depression with ideas of self-accusation, guilt and self-depreciation, fear of losing control of oneself, as well as previous attempts at suicide.

It is vital that not only the physician (not psychiatrically-oriented) but also the family of the mentally ill patient be sensitized to the problems of suicide. How necessary is it for the physician to analyze personality in order to forestall self-destruction in his patient. How vital is it that he understand how seemingly insignificant details are highly meaningful to the mentally ill patient.

Suicide must be traced to the early formative fears of childhood when the structure of the ego and super-ego is being formed. Education and enlightenment on sexual matters, as well as a more tolerant and understanding attitude on the part of physicians and parents regarding adolescent drives and relationships, will serve to decrease the incidence of suicides.

The need to establish more clinics for providing psychotherapy for the distressed, to disseminate more information regarding suicide among the general public, to include more information on the subject in medical books for students and physicians, and to provide for a more profound research must challenge the general public to a solution of the stupendous problems of suicide.

The Physician and the Atomic Bomb

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(Every physician, whether in a so-called strategic area or not, should be acquainted with the basic principles of the atomic bomb as it might be related to medical practice. We are, therefore, publishing this article, which originally appeared in California Medicine, December, 1951, since it is one of the clearest and most informative discussions of the subject which we have seen.—Editor)

Atomic detonations are essentially of two types: contaminating and non-contaminating. The only non-contaminating burst is the high air burst, since it does not result in the contamination of the ground with radio-active bomb residue. This type of burst results in blast, thermal and ionizing radiation injury (often combined in the same patient).

The only injurious agent peculiar to atomic warfare is ionizing radiation. With a high air burst these effects are due mainly to gamma rays, and they are no longer present after the first few seconds following the explosion. Although only about 15 per cent of the deaths resulting from this type of burst are likely to be due primarily to ionizing radiations, exposure to the latter may well complicate recovery from trauma.

Since there is a latent period of a number of days between the initial and later symptoms and signs of whole body radiation exposure, it does not constitute an emergency and can be treated after the initial period of the disaster has passed.

With the detonation of a contaminating burst (a surface, underwater or underground burst) the radii of damage from blast and thermal radiation are considerably less than with a high air burst. Two types of radiation may result from the radioactive fog (base surge) formed after an under water burst—transit radiation and deposit or continuing radiation. The deposit radiation includes that resulting from inhaled or ingested radioactive material as well as that deposited on clothes or skin. Bomb residue contains material which would localize in bones if it entered the body, and much of it has a long radioactive and biological half-life. It would thus bombard the radiosensitive bone marrow for long periods.

Fortunately, the materials which would localize in bone are poorly absorbed from the gastrointestinal tract and lungs.

In general radiation injury to a person exposed to a contaminating burst should be reckoned primarily in terms of the penetrating gamma radiation to which he was exposed, rather than in terms of possible internal radiation from ingested or inhaled contaminants.

The principles of broad planning, careful triage, decentralization of medical aid, intelligent stockpiling, and the greatest good to the greatest number are to be stressed in medical defense planning.

The best appraisal of exposure and its degree of seriousness is, as it is with disease in general, an accurate clinical evaluation by the physician. The tempo of the disease is an important aid in evaluating severity of exposure. The use of the dosimeter in judging the fate of a given individual is, at least at present, of limited value.

The purpose of this article is to present in a concise form aspects of atomic warfare that are of importance to the practicing physician who may find himself faced with the problem of caring for the victims of an atomic disaster. In the event of atomic attack on our cities the physician will be a key figure in providing health services to the victims, and it is therefore of the utmost importance that he be fully cognizant of the situation he may have to face shortly after the attack.

The number of dead and injured in the event of atomic attack would be overwhelming. For example, if this were to occur in a city with a population of a quarter of a million, 50,000 to 100,000 injured and 5,000 to 20,000 dead are not unreasonably high estimates. Thus, because of sheer numbers the casualties could not possibly receive what would normally be considered adequate care. In consequence of this, detailed advance planning is of the greatest importance. Such plans are dependent on a careful evaluation of the probable types of injuries, the relative numbers of each type, and the urgency of the need for treatment.

Any predictions of numbers of dead and injured can only be rough estimates at best, for the actual numbers would depend on the number of bombs used, the kind of bursts, the sizes of the bombs, the shape and topography of the targets, the weather, the time of day, the population density, etc. Most predictions have been for the air burst only, for this use of the weapon is believed to be the most destructive. However, the major effects of bursts of any type should be considered. A miss could conceivably convert what was intended to be an air burst into an underwater or surface burst.

KINDS OF ATOMIC DETONATIONS

Atomic detonations may be segregated into contaminating and non-contaminating. The only burst of non-contaminating type is the high air-burst, in which blast, heat, and ionizing radiation expand their energy over a wide area in the course of a few seconds. As the cloud ascends, all radioactive bomb residual is carried aloft and no significant* contamination of the ground with radioactive material occurs.[8] Essentially no ionizing radiation other than immediate burst of gamma rays is encountered. It is as though a giant x-ray machine were suddenly turned on in the sky, and were left on for approximately one minute and then turned off. And just as one would not hesitate to enter an x-ray room and handle the patient immediately after the beam is turned off, so it is safe for rescue teams to enter the bombed area *immediately*.

A "contaminating" burst can be defined as any detonation in which the fireball" comes in contact with the earth's surface. This results when the detonation occurs either on or below the surface of the earth, or at an altitude such that the "fireball" can touch the surface. The low air, the surface, the underground and the underwater burst are of the contaminating type. In general, the radii of damage for blast and thermal effects are decreased as compared with those of the air burst. The ground (or water) is actually contaminated with residual bomb products, both fissioned and unfissioned. Also, activity induced in the earth or water by neutrons liberated in the fission process may rise the general level of contamination.

With a burst of this type, then, the bombed area actually becomes radioactive, as though radium or other radioactive material had been spread over the area, and this radioactive material continues to emit ionizing radiation for long periods after the detonation. With a burst such as the underwater detonation, for

*There could be some ground contamination resulting chiefly from a "fallout"; but the levels of activity would be very low and would constitute a minor hazard compared to the gravity of the over-all situation.

example, it is likely that significant quantities of radioactive material can be carried well beyond the range of major blast or thermal damage.

The chief distinction between the contaminating and non-contaminating bursts lies in the presence or absence of residual radioactivity in the bombed area after the detonation. Blast, heat, and nuclear radiation may be present in varying degree in bursts of any type, but the magnitude of each effect in producing casualties will vary in accordance with the manner in which the weapon is used.

THE AIR BURST

The bursts of various types and the important phenomena associated with each have been reviewed. The effects of the high air burst will now be considered further. And while blast, heat, and ionizing radiation are treated separately, it is well to keep in mind that these phenomena rarely produce effects singly and, therefore, injuries generally would be multiple in nature.

Blast Effects

The effects of blast on man can be divided into two categories:

1. *Direct* effects resulting from interaction between the shock wave and the human body.
2. *Indirect* effects resulting either from objects set in motion by the blast striking the body, or from the body striking stationary objects.

Direct effects will be mentioned only to eliminate them from further consideration. There are essentially no circumstances during or following an atomic burst in which direct blast pressure could injure a person who would not be killed "many times over" by other effects.

Indirect blast injuries are mechanical injuries and are similar to those produced by falls, by blows with blunt instruments, or by automobile accidents. They consist of contusions, lacerations, simple and compound fractures, internal injuries, penetrating wounds, crushing injuries, etc. Injuries from flying glass would be extremely common. In the Japanese disasters mechanical injuries among survivors were in general of a minor nature; the absence of major trauma among survivors is ascribed to the fact that victims so afflicted could not escape the conflagration which developed in the first few hours after the burst[12] In cities of more fireproof construction, or under improved conditions of rescue, the number of survivors with major traumatic injuries might well be much larger than it was in Japan.

The kind of mechanical injury referred to is, of course, not peculiar to the bomb. But it must be remembered that there might be *thousands* of victims with injury of this type for whom treatment would be needed almost simultaneously. There would be neither time nor facilities to care for all of them adequately.

Thermal Effects

The thermal radiation from the exploding bomb can cause injury in two ways:

1. The radiant heat may act directly on exposed personnel and produce *primary burns* or *flash burns*. This kind of injury would happen only to people who were in the open or near a window.
2. The radiant heat can char structures, clothing and other combustibles in the affected areas, and those burning objects may themselves inflict burns. Such burns are termed *"secondary"* burns.

Actually, radiant heat probably would contribute much less to the igniting of materials than would overturned stoves, electrical "shorts," etc. At any rate, in the first few hours following the burst, a widespread conflagration would kill potential survivors trapped in the wreckage or otherwise unable to leave the scene.

The extreme rapidity with which the thermal radiation is delivered and the relatively poor heat conductivity of the skin results in burns that are in general superficial and painful, but which may be deep in victims near ground zero.* "Shadow effects" are common; a man be shielded by buildings, clothes, or even by body contours.[12] Radiant energy burns generally are on one side of the body only. Patterned clothing may permit burns beneath dark-colored areas while the skin beneath the light areas is not burned.

Burns present no new problem, but it must be recognized that they are large open wounds and that shock and infection are a serious threat. Flash burns are not uncommon in industry, and certainly the treatment of burns from flaming structures is in every physician's experience. The well-known factors of the location, the degree and the body area involved enter into the appraisal of the severity of the burn.

Effects of Ionizing Radiation

The only injury peculiar to atomic warfare is that caused by ionizing radiation. However, in the event of an airburst ionizing radiation would not be the chief cause of mortality. Only 15 per cent of the Japanese fatalities are attributed primarily to ionizing radiation.[12] But if measures are taken to prevent thermal and blast injury, ionizing radiation would assume much greater importance because it is more difficult to shield against.

Radiation injuries resulting from a high air burst are chiefly the result of the gamma rays which are liberated during the first few seconds.** as we stated,

*The point on the ground nearest the center of detonation.
**The effective range of neutrons liberated during the fission process does not extend beyond the range of total destruction. However, they may assume greater importance in that, if shielding were available to protect adequately against heat, blast, and even gamma rays, neutrons might still be lethal.

these penetrating gamma rays are similar in all respects to high-energy x-rays. The biological effects of such rays can be duplicated in the laboratory by the use of either high energy x-ray machines or by use of gamma ray sources.

The sudden burst of gamma rays from an air burst may be important from two aspects:

1. Large doses of the rays will produce the clinical picture of acute radiation injury,[7] or the picture as it may be modified by partial shielding of the body.

2. With smaller doses, although the complete clinical picture of acute radiation injury may not be evident, exposed persons may become debilitated and particularly susceptible to infection.[13] This complicating factor may interfere with healing of burns and traumatic injuries.

The clinical picture of acute radiation injury can be characterized as follows:[10]

Following an exposure to a large dose (300 r to 500 r) anorexia nausea, vomiting, malaise, fever and thirst may appear in the first few hours. These symptoms subside and are followed by a period of variable length (a few days to a few weeks) in which the patient is apparently well. During this period leukopenia, thrombopenia, and disappearance of reticulocytes become evident. A decrease in lymphocytes appears early and the granulocyte changes follow. Anemia is slow in developing.

The latent period usually ends with the onset of epilation, usually of the head, and often of the armpits and pubes. This is reversible. Anorexia and malaise return, as does a stepwise-rising fever. Pharyngitis and oropharyngeal ulcerations (agranulocytic angina) appear; then bleeding tendencies—petechiae, bloody diarrhea, nose bleeds, purpuric spots, etc. This may be followed by the development of enteritis, hemorrhagic lobular pneumonia and other infections that may result in death. Occasionally, a more prolonged course characterized by debilitation and emaciation may precede death.

In patients who recover, the signs and symptoms of the disease disappear approximately in the following order: Pharyngitis, diarrhea, petechiae, fever, and oropharynegeal lesions. Recovery is associated with an increased leukocyte count in the peripheral blood. However, a patient in whom the leukocyte count is returning to normal may die. Anemia in survivors extends into the period of convalescence.

The pathogenesis of this disease insofar as it is understood at present, is as follows: There are three tissues affected in the main, the bone marrow, the lymphoid tissue, and the gastrointestinal tract. The disease in its terminal stage is not unlike advanced aplastic anemia. With large doses of radiation the result is aplasia of the bone marrow. This results in the blood picture which was described. The low leukocyte count coupled with disturbances of other immunizing mechanisms contributes to a lowered resistance to infection, which in turn permits development of oral, gastrointestinal and pulmonary lesions. There is an absence of cellular tissue reaction around these infectious lesions.

The decreased platelet count is probably an important cause of the hemmorrhagic tendency. Also involved possibly are an increase in circulating heparin-like substances in the blood, and an increased capillary fragility. The lack of erythrocyte production and the bleeding tendencies are mainly responsible for the anemia. Infection may also be a contributing factor to the anemia. Depression of the erythroid elements of the bone marrow is pronounced. This is reflected in the reduced uptake of administered radioactive iron into the erythrocytes following total body radiation.

The diarrhea, which is often sanguineous, has been explained on the basis of edema of the bowel, denuding of the mucosa secondary to infection, and hemmorrhage.

A most important characteristic of acute-radiation injury is the latent period: A severely exposed person may have no serious signs of illness for a number of days. It should be recognized, then, that acute radiation injury does not constitute an emergency and can be treated after the trying initial period of disaster is over.

The dose of gamma radiation necessary to produce death or serious illness depends on several biological and physical factors. The dose necessary to kill approximately 50 per cent of a group of exposed human beings* is usually taken to be 44 r, although a few may die after doses as low as 200 r and a few may survive doses as high as 600.[4] Hence it is seen that a large individual variation in susceptibility exists. In addition, the previous condition of the exposed person is important in determining the response and prognosis. A sick person is more likely to have serious effects from a given dose of radiation than is a well one. Subclinical or low-grade infections that in themselves would not be lethal may, in conjunction with a usually sublethal exposure to radiation, cause death.[3]

The existence of partial body shielding may be important in establishing the prognosis of a patient, and victims should be questioned about possible partial as well as total shielding. To take an extreme example, if 10,000 r were directed to a small region of the body, i.e., the hand, the victim would not die

*A species difference exists,[9] the LD_{50} for rabbits is about 750 r; for rats, about 650 r; for goats, about 350 r; for dogs, about 300 r. Since most animals that die after acute total-body irriation do so in 30 days or less, the period of observation for lethality is taken as 30 days, e. g., the LD_{50} 30 days is determined. Many severely exposed human beings, however, die between the 30th and 60th days after exposure.

of "acute radiation injury." But if 400 r were delivered to the whole body about 50 per cent of victims would die. If the abdomen were completely protected with lead,** the dose necessary to kill 50 per cent of exposed persons would be of the order of 1,200 r. If everything but the abdomen were protected and the abdomen irradiated, the LD_{50} dose would be about 600 r. The abdomen-shielded persons would probably have a syndrome different from that of those who received whole body irradiation, and the time of death the abdomen-irradiated persons would probably be earlier than that of the abdomen-shielded. Head irradiation alone probably would produce death at doses of the order of 1,200 r. Obviously, these figures were derived by extrapolation from animal experiments[2] and can be regarded only as rough approximations.

It was stated earlier that the energy of the gamma rays is very great.[8] This high energy is of importance in that it can produce essentially "whole body" radiation in man. This may be clarified if it is pointed out that if small animals such as the rat or mouse are irradiated with 250 KVP x-rays, the energy absorbed at different depths of the animal will be sensibly the same. However, if a large animal the size of a man is irradiated with x-rays of the same energy, the irradiation of the tissues farthest from the beam would be creased by a factor of approximately ten. If higher energy or more penetrating radiations are used, the dose received throughout an animal tends to be more uniform.

The total dose of radiation that may be received from a high air burst is delivered over a few seconds. There is no time for recovery during irradiation and the effects are maximal. If the total dose is given over several days, for example, as opposed to a few seconds or minutes, the does necessary to produce serious damage is larger. If intermittent or repeated exposure is experienced, the dose necessary to produce serious damage is also increased. This, again, is because recovery is permitted during irradiation.

Numbers of Injured

The effects of blast, thermal radiation, and nuclear radiation have been considered separately. It is of importance to consider these injuries collectively, to gauge the relative number of each kind and to consider where they occur with respect to ground zero.

It is stated frequently that (assuming detonation of the nominal or 20 kiloton bomb) of the people present in the zone extending from ground zero to one-half mile from ground zero, 90 per cent or more would be dead or injured, and that in the second zone extending from one-half mile to one mile, some 80 per cent would be dead or injured. Such a representation, however, is in a sense misleading, for the more remote the zone from ground zero, the greater the population in it because it is of greater area. When 90 per cent or more of the population of the innermost zone are dead or injured, this is a large percentage of a relatively small number of people. Also, the physician would be primarily concerned with the injured survivors, and from this standpoint it is necessary to consider that most of the people in the innermost zones would be killed. Of more importance to the rescuer is a consideration of the probable number of *survivors* in each zone and how many of them are likely to be injured.

Exact figures are not available but it is probable that most of the injured would be found in the zone extending from one mile to a mile and a half from the center of the blast. Considering again that radiation is falling off rapidly at one mile while heat and indirect blast effects are still important at two miles, it is obvious that in the zone where most injuries are likely to occur radiation is not a significant factor. In other words, most of the injured there would have blast injuries or burn injuries or both.

However, it should be stated also that a sizable percentage of survivors needing treatment would be in the zone extending from one-half to one mile from ground zero, where gamma rays are still effective. Hence radiation damage can be expected, not only as a primary entity but as a serious complicating factor. The importance of radiation should not be overemphasized—or discounted.

It should be pointed out again that with modern structures providing protection against heat and blast, and with improved rescue techniques, the chance of survival closer to the bomb is greater and hence the probability of radiation injuries is increased. It should also be reemphasized that only the burned and traumatized victims will need emergency treatment, for lesions and accompanying shock; acute radiation injury, or complicating radiation dosage, does not constitute an emergency.

As to the numbers of casualties, totals are dependent on the size of bomb, type of bomb, number of bombs used, density of population, etc. But a figure of 50,000 persons who need treatment in a city of 250,000 or more is conservative; 75,000 or 100,000 is not unreasonable. Furthermore it must be remembered that treatment of all *simultaneously* would be required. Relative numbers of casualties can be gained from the following hypothetical breakdown of injuries:[12] Wounds, 70 per cent; burns, 65 to 85 per cent; radiation injury, more than 30 per cent.

Perhaps of more practical value would be information on the expected diagnosis and outcome per 100 casualties. This could be represented as follows:[11] Wounds (no burns), 60; burns (with or without wounds), 40; radiation injury, any degree, 30; died (all causes), 25; died of burns, with or without other injuries, 19; died of wounds, 6.

**The weight of material required makes it appear at present that a partical body "armor" against bomb radiations is impractical.

THE CONTAMINATING BLAST

The radius of damage from blast or heat with a burst of the contaminating type would be, in general, less than that of the high air burst. With the subsurface burst, effects of radiant heat might be entirely absent. With an underwater burst off shore, blast may be no problem at all to shore establishments. With the underground burst, it is not unlikely that an earthquake-like phenomenon might cause destruction at a considerable distance.

As with the high air burst, direct blast effects (in air) would be of no practical concern. Indirect blast injuries and burns, if they are present, would not differ qualitatively from those of the high air burst. There might be few or no flash burns and relatively larger numbers of flame burns.

As to radiation encountered with the contaminating burst, some elaboration is necessary. For example, in the underwater burst, as the large mass of water thrown into the air by the detonation falls to the surface, a highly radioactive fog or base-surge forms, which rolls over the bombed area and then ascends into the sky.

Radiation delivered from the base-surge can be divided into two types, transit radiation and deposit or continuing radiation. The transit radiation is delivered as the base-surge rolls over the area and ascends into the sky. Again it is as though a giant x-ray machine had been slowly drawn over the area and then pulled up into the sky out of range. Radiation of this type is delivered to the bombed area over a matter of minutes. It then disappears.

The transit radiation of medical importance, then, is delivered over a short period of time, as with the air burst, and is composed of gamma or penetrating rays like x-rays. Like the high air burst, it can produce total body radiation resulting in acute radiation injury. But as the base-surge rolls over the area, it rains or deposits radioactive materials on objects and personnel below. It is as though a large quantity of radium or other radioactive material had been spread over the bombed area.

The deposit radiation can get on the clothes and on the skin. Here again the x-ray analogy may be used. But here the "x-ray machine" has not been lifted out of range; it remains on the clothes or on the skin. Still, penetrating gamma rays are given off; still, whole body radiation resulting in acute radiation injury may be produced.

And suppose a person even ingests or inhales the base-surge? Here he has taken numerous "small x-ray machines" or radioactive isotopes into the body; they continue to give off penetrating radiation, the entire body can be irradiated, and acute radiation injury may occur. Again, if large amounts of radioactive fog or mist from the bomb are deposited on the clothes or skin, or even enter the body, acute radiation injury may result.

The penetrating gamma rays are the chief or "controlling" hazard to personnel contaminated shortly after the detonation. But other hazards result from the deposition of radioactive material from the bomb, and in order to describe and evaluate their role it is necessary first to elaborate further on the composition of the radioactive bomb residue.

Addition to gamma emitters, the bomb residue also contains beta-emitting fission products. The emitted beta rays are termed non-penetrating, since fairly energetic beta rays penetrate only a centimeter or less in tissue. If present on or near the skin in large quantities, these rays can produce "beta burns." If beta emitters are inhaled or ingested, the lungs or the gastrointestinal tract can become irradiated.

Unfissioned bomb residue (plutonium or uranium) emits alpha rays. If small quantities of this material gain access to the bones, serious chronic effects may result. A well-known example of this type of injury is that of the watch-dial painters. These people, while pointing their brushes with their lips, ingested enough radium and mesothorium (also alpha emitters) over a long period of time to localize in the bones and cause death after several years, from anemia, infection or osteogenic sarcoma. Certain long-lived beta-emitters found in the bomb residue also localize in the bones and are capable of causing this type of damage. All such long-lived elements (either alpha or beta emitters) can be called collectively the "bone seekers" and can give rise to an "internal radiation" problem. In general, bone seekers are very poorly absorbed from the lungs and gastrointestinal tract, and relatively large quantities must be inhaled or ingested before dangerous amounts gain access to the bones.

To evaluate the hazards from these sources it is necessary to consider the relative amounts of the different types of radiation associated with a given quantity of bomb residue. Initially (soon after the detonation) the amount of gamma and short-lived beta emitters associated with any significant quantity of "bone-seeker" is very large; relatively, the gamma radiation is the overwhelming hazard. The gamma-emitters in general, however, have extremely short half-lives; as times goes on after the burst, the gamma hazard becomes very much reduced and, relatively, the "bone seeker" or "internal radiation hazard" becomes of greater importance.

The important conclusions from these considerations are as follows: Radiation injury to a person exposed to contamination at the time of an atomic detonation should be reckoned primarily in terms of the penetrating gamma radiation to which the person was exposed. Associated acute beta radiation to the skin or to the lungs or gastrointestinal tract can occur, but, in general, cases of severe exposure of this nature will not be a serious problem. If a victim is exposed to the

base-surge and ingests or inhales "bone seekers" in dangerous quantity, he is likely to have received a sufficiently large dose of gamma radiation to result in death before the "bone seekers" can become dangerous.

This does not mean that contamination should not be removed from the skin, for no irradiation should be taken lightly. But the surviving patient should be assured that even though he may have some contamination on his skin as he emerges from the bombed area, if he survives the first few weeks (acute radiation illness period) he is in all probability not doomed to the chronic disease observed in the watch dial painters.

It should be emphasized that the above considerations apply only to victims emerging from the bombed area—that is, the patients who will be seen immediately after the burst. It does not apply to clean-up or reoccupation operations at a later date when the rapidly decaying gamma emitters have essentially disappeared. Here long-lived bone-seekers can be a serious problem. In general, however, such a situation would be encountered late after the bomb detonation and operations would be organized under radiological specialists. The responsibility for radiological safety will not, in general, fall to the practicing physician.

It was stated previously that gamma radiation decreases in amount very rapidly immediately after the burst. An idea of the rapidity of the decay can be obtained from the statement that if a man is trapped in the bombed area and received 100 r over the first hour, if he remains in the area for days or even weeks he will receive a total of only about 120 r.[14] Hence, if a man emerges from the bombed area and has significant amounts of radioactive contamination on him when observed medically, he should be treated as a potential radiation injury casualty. The chances are great that if he is significantly contaminated when he emerges, he has received a large dose of radiation before he emerged.

MEDICAL DEFENSE PLANNING

A resume of the physical and medical effects of atomic bomb detonations has been presented. Consideration must now be given to the means of handling the situation from the medical point of view. The bomb has exploded; the damage has been done; now what is to be done? The task is an overwhelming one. It is of such magnitude that it cannot be considered in ordinary frames of reference. Defense planning on a local level alone would be disastrous. Regional and nationwide planning are mandatory if effective countermeasures are to be developed.

The guiding principle of the defense plan must be the greatest good to the greatest number. This must be emphasized again and again. Selfish motives and self-interest must give way to unified action according to plan.

Medical defense planning is a large subject and it is obviously not possible to cover it adequately in a relatively short article. It will, therefore, be possible to cover only the principal aims of a medical defense plan and how they can be accomplished.

After an air burst has occurred in an urban area, for example, a stream of injured would begin to pour out of the bombed area, leaving behind many seriously injured who could not move out under their own power. Rescue teams would enter the stricken area to guide the stream of victims to medical aid stations and to evacuate the seriously injured. It is natural to inquire, then, into the question of when and where the injured would be cared for. It is obvious that the patient and the physician and his supplies and facilities must be brought together in time and place. Is the patient taken to the treatment center or the treatment center to the patient? In other words, just how much can be mobilized effectively and taken to the patient, and, conversely, how far can the patient be transported? In short, the patient is brought as far as his condition will permit and the availability of facilities for his care requires. Transportation to a point whre safety from burning and falling debris is assured is axiomatic.

In order to decide, then, on the kind of treatment facilities needed and where they should be available, the casualties must be analyzed according to severity of injury. Persons mortally wounded would, of necessity, be transported only short distances if at all. That would include persons in shock or impending shock, those with respiratory embarrassment and those with hemorrhage. Their care would be provided for by mobile units on the spot or in casualty stations at the perimeter of the disaster area. The seriously injured who can be transported would be cared for in evacuation hospitals to the rear of the bombed area. It would be necessary to evacuate patients to neighboring cities for care. Persons with minor injuries would be attended to in the casualty stations. If at all possible the latter should be treated far to the rear of the bombed area, thus reserving the close-in facilities for the patients who could not be moved.

It follows that a very important consideration in medical disaster planning is adequate triage or sorting of patients. This would be done at the forward stations. Decentralization of medical aid with large stations. Decentralization of medical aid with large numbers of smaller mobile units and casualty stations would be desirable. Patients would not have to travel so far, and destruction of large centralized facilities would be minimized by this means.

Because of the enormous supplies of plasma, plasma substitutes, bandages, splints, essential drugs, etc., which would be needed, adequate care of victims would depend on stockpiling well in advance of expected attack. Neighboring areas must plan to cooperate by sending physicians and supplies to the bombed areas and by receiving evacuated patients.

Rescue teams and personnel of the treatment units would not, in all likelihood, find the victims of an atomic disaster easy to handle.[13] They probably would be stunned and bewildered. Also they might be anxious and grief-stricken, or even hostile. Hostility might reach the point of physical violence toward the rescuer at what might be interpreted as neglect of members of a victim's family in favor of other victims. It is, of course, obvious that medical supplies would have to be conserved. Vitally needed supplies and equipment ought not be depleted by ill-considered use on persons only slightly injured, or on those beyond medical aid.

In atomic attack the psychological factors would be increased because the populace would be unaware of the nature of the attack. In view of the psychological aspects of the problem, rescue personnel would require police power and weapons to enforce it. They would then also be empowered to prevent unauthorized use of vehicles in the disaster area and thus prevent interference with rescue operations. Pillage is, of course, a usual concomitant of disaster, and the measures mentioned would help prevent it.

Indoctrination programs should be instituted to reduce the psychological problems the rescuer probably would encounter. In the process of the indoctrination to prevent anxiety, consideration should be given to some of the misconceptions regarding the effects of irradiation. For example, contrary to the belief of some persons, acute radiation injury is not a communicable disease, nor does it cause the patient to be radioactive. Many people believe that it is possible for an object or person contaminated with radioactive material to render objects or persons in the immediate vicinity radioactive without actual contact. This is, of course, false, for contamination can only be the result of actual transfer of radioactive material from one object to another.

Cancer is thought to be an occasional sequel to periodic radiation exposure. There are little or no data to indicate an increased incidence of cancer among survivors of a single acute exposure, although it appears likely that the incidence of leukemia will be higher among the Japanese survivors than in the population as a whole.[11] Cataracts of varying severity have appeared in Japanese survivors; but the incidence to date is low. Sterility was rare and tarnsient, and the incidence of abnormal offspring did not increase.

Radiation exposure is commonly thought to result in impotence. This is, of course, false. Such a condition can result from emotional stress in predisposed persons, and such stress is quite possible in the bombed population. However, the incidence of this condition among Japanese survivors was very low.

Education of the public, and proper indoctrination of rescue teams, will go far to diminish the psychological stress and the resulting deleterious effects of it following an atomic burst.

THE INDIVIDUAL CASUALTY

Diagnosis

It has been emphasized that blast and burn casualties will constitute the main problem. Careful evaluation of the burned or otherwise injured patient will be necessary, but the diagnostic problems are not new. However, since acute raidation injury has not been observed by many American physicians, and since its manifestations are, for the most part, delayed, it will present a diagnostic and prognostic problem.[7, 8] It is of value to decide what criteria are available to determine what persons have been irradiated, and to what degree.

Some information on dosage received can be gleaned from (1) the dosimeter reading, if available, and (2) the position of the person relative to the site of detonation. Dosimeters either on or in the vicinity of the individual will indicate the order of magnitude of dosage received. Knowledge of the position, if the kilotonnage of the bomb is known, will also permit estimation of dosage—a person in the open, 4,200 feet from the epicenter of a 20-kiloton bomb, would have received about 400 r, while a person at 5,200 feet would have received about 100 r. The size of the bomb can be approximated soon after the blast, and the distance-dose relationship should be available early.

Such estimations of dosage are excellent as a basis for over-all planning. As an accurate index of the probable fate of an *individual*, however, such estimations at present are of limited value. Dosimeters indicate the dose received by the instrument, which may be only a rough approximation of the effective dose received by the person in question. The position of an individual is obviously but a rough index of dosage received. Neither the dosimeter reading nor position take adequate account of the energy of the radiation, nor the degree of partial or total body-shielding of the individual; and, most important, the extreme degree of variation in response of individuals. Hence, neither the dosimeter readings nor position data should be used *by themselves* as the final index for triage, therapy, or prognosis. That is, there may be a vast difference between the presumptive diagnosis resulting from physical data and the diagnosis resulting from an over-all clinical evaluation of the patient's status.

The best appraisal of exposure, and degree of exposure is, as with any disease, an accurate clinical evaluation by the physician. A thorough evaluation can result only from a history (which includes any physical estimates of dose), a physical examination, and pertinent laboratory data. Symptoms suggestive of radiation injury include vomiting on the day of the bombing, oropharynegeal lesions, and hemorrhagic manifestations other than cutaneous purpura. Specific symptoms include epilation and purpura. The presence or absence of the symptoms indicated previously

anorexia, malaise, diarrhea, melena, etc.) are of considerable value in appraising the status of a patient.

The degree of exposure can be estimated fairly accurately by the tempo of the disease. For instance, if vomiting on the day of the bombing proceeds without remission to other symptoms of the disease, exposure probably was severe and the prognosis is grave. If vomiting on the day of the bombing is followed by a remission, or if vomiting is absent entirely, the probability of severe exposure is less and recovery is likely.

The clinical laboratory can provide data of inestimable value in early diagnosis and prognosis. Pronounced leukipenia is indicative of severe exposure, and a total leukocyte count of below 2,000 per cubic mm. of blood in the first week if indicative of very severe prognosis. A total lymphocyte count of less than 800 per cu. mm. tow days after exposure is presumptive evidence of severe radiation exposure.[11] A significantly lowered absolute lymphocyte count within 24 hours is quite suggestive of such exposure.

Platelet counts remain stable for several days following exposure; however, a greatly decreased platelet count one week after exposure is indicative of severe overexposure. Anemia appears late, as much as two to three weeks after exposure; hence the erythrocyte count is not a good early index of damage. However, an increase in reticulocytes any time after exposure is a very good prognostic sign.

Treatment

It remains to examine what can be done for the patient with acute radiation injury. The treatment of this disease is at this time entirely symptomatic and supportive, and physicians in general have had no clinical experience with acute radiation injury. Nevertheless, intelligent care, even if only of a supportive nature, would salvage a great number who might otherwise die.

The severely irradiated patient should be put at complete bed rest as soon as possible after exposure. It has been shown with laboratory animals that repeated vigorous exercise considerably increases mortality.[9]

The use of antibiotics in the irradiated patient would probably be of definite value. Antibiotic therapy should probably await a clear-cut clinical indication for it. However, optimum dose schedules for man must await further clinical experience. Large doses probably would be needed to offset the lack of immune responses of the irradiated subject.

The value of transfusions in radiation injury is in doubt at this time. However, should transfusions be used they probably would not need be started until anemia was present, generally two weeks or more after exposure.

Adequate fluids and salts should be given to replace losses due to vomiting and diarrhea. The oral or rectal route should be used if possible; needle punctures would be hazardous because of the bleeding tendencies and the decreased resistance to infection of the irradiated patient.

The bleeding tendencies might be treated with protamine or toluidine blue. These are believed to combine with the heparin-like substances said to be present in the blood in excess concentration. Neither this mechanism of the hemorrhage nor the efficacy of this type of treatment has been established in man.

Vitamins C, P, rutin and various flavinoids have been suggested as being of some value in preventing capillary fragility. These are of doubtful value in preventing the hemorrhagic effects in the irradiated patient.

Oxygen may be efficacious in alleviating the tissue anoxia, which may be present in radiation injury.

A liquid diet should be used early. Later, a smooth diet should be given, since injured gastrointestinal tract mucosa will not tolerate even mild trauma.

Little benefit may be expected from iron supplements and folic acid. Several prophylactic agents such as cysteine, glutathione, and substances producing histotoxic anoxia (cyanide, thiouracil, etc.) have been found to be of value in animals if administered prior to irradiation. No such drugs have been tried for whole body irradiation in man, and at present there is no prophylactic agent of practical value for use in human beings.

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Note: The California Civil Defense Authority created a State Radiological Safety Evaluation Board after this article was accepted for publication. This board in turn has created a series of Regional and Area Evaluation Boards which are now in process of organization and rehearsal. These boards will be composed of radiologists and other persons familiar with radiation hazards, and will work in cooperation with local fire and police departments in the event of a bamb strike. Their work will be integrated with the Radiological Defense Division of the State Civil Defense Program.

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CANCER

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BRAIN TUMORS

A Clinical Survey

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Intracranial tumors are largely benign as regards their histo-architecture but are anatomically malignant in relation to their threat to the life of the patient. Because of this fact and the lack of any other broad program for the care of these patients, the Cancer Clinic of the Medical College of South Carolina has accepted for treatment all cases of suspected brain tumors. The present report is a review of brain tumor cases from the files of both the Cancer Clinic and the Roper Hospital. The inclusion of private patients in the Roper Hospital has limited the opportunity for follow-up data. Cases dying of disseminated carcinoma with intracranial involvement are not likely to be revealed in a search of hospital records where the primary cancer only is indexed. Pituitary adenomas, diagnosed by office examination plus radiography of the skull, and treated by x-ray without hospitalization, may well escape inclusion in this statistical survey. Nevertheless we have attempted to review all cases indexed in the files of the Cancer Clinic and the Roper Hospital during the ten year period between January 1, 1940 and January 31, 1949. Only those cases which were considered to have definite evidence of intracranial neoplasm were included in this analysis, a total of 72 cases. As shown in Table I, 40 were verified histologically, while in 26 cases there was no histological verification. Six cases are listed only as probable brain tumors because they either refused complete diagnostic studies and treatment or were referred to another institution.

TABLE I

Histologically verified tumors	40
Cases not verified histologically	26
Probable brain tumors	6
Total	72

Table II presents a classification of the tumors with the histologically verified tumors listed according to the proven microscopic diagnosis, and the unverified tumors listed according to the most likely diagnosis based on the complete clinical picture. It will be noted that 72% of the histologically verified tumors fell in the glioma group.

TABLE II
CLASSIFICATION

Histologically Verified Tumors	
I. Glioma	
Glioblastoma multiforme	12
Astrocytoma	3
Astroblastoma	3
Spongioblastoma multiforme	3
Spongioblastoma unipolare	1
Medulloblastoma	1
Ependymoma	1
Ependymoblastoma	1
Pinealoma	3
Mixed glioma	1
II. Meningioma	3
III. Tumor of Hypophysis	1
IV. Tumor of Blood Vessels	1
V. Acoustic Neuroma	1
VI. Congenital Tumor—Craniopharyngioma	2
VII. Metastatic Tumor	2
VIII. Granuloma—Tuberculoma	1
Total	40

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This study was supported in part by a cancer training grant from the National Cancer Institute of the National Institute of Health, U. S. Public Health Service.

Unverified Tumors

Astrocytoma	3
Pinealoma	3
Pituitary Adenoma	5
Metastatic Carcinoma	1
Tumor of Blood Vessels	2
Meningioma	1
Brain Tumor (Probable Glioblastoma)	11
Total	26

Probable Tumors 6

In Table III is tabulated the incidence of cases in three arbitary age groups, listing patients as adults, adolescents, or children. The probable brain tumors are included with the unverified cases in this tabulation.

TABLE III

INCIDENCE IN AGE GROUPS

	Adults	Adolescents	Children	Total
Verified	32	0	8	40
Unverified	25	5	2	32
Total	57	5	10	72

A tabulation of the location of the tumors within the brain is given in Table IV.

TABLE IV

LOCATION

	Verified	Unverified
Cerebral Hemsipheres		
Frontal Lobe	13	3
Temporal Lobe	9	4
Parietal Lobe	9	6
Occipital Lobe	3	2
Diffuse Involvement of a Hemisphere	1	4
Cerebellum	3	4
Third Ventricle	7	9
Brain stem	3	1

Anatomically, in several cases at operation and/or autopsy, the tumor was located in more than one contiguous lobe, thus accounting for the listing of more locations than cases. In one case, a 61 year old white male was suspected clinically of having a cerebrovascular accident, but was found at autopsy to have a tumor mass in the left frontal lobe and another in the right occipital lobe, both histologically similar and identified as glioblastoma multiforme. As anticipated, a majority of the tumors involved the cerebral hemispheres.

Among the histologically proven tumors there were three of the cerebellum, only one of which occurred in a child, a 4 year old white boy. This was a medulloblastoma. The tumor was unencapsulated at operation and the excision was thought to be incomplete. X-ray therapy was given postoperatively. The child's family subsequently moved to another city. Six months postoperatively it was learned that the child was rapidly becoming worse and that another course of x-ray therapy was contemplated. The other two cases were in adults. In one, a 47 year old white female, only a suboccipital decompression was done at operation because of the patient's poor general condition. She died two days postoperatively and autopsy revealed a tumor mass in the left cerebellar tonsil which on histological section was an ependymoma. The second patient, a 56 year old white male, was operated upon because of signs of a cerebellar tumor. Death occurred on the twenty-third postoperative day, and at autopsy a large tumor mass was found in the right cerebellar hemisphere, histologically similar to a bronchogenic carcinoma found originating from the left upper lobe bronchus. Among the histologically unverified tumors there were three cerebellar tumors in adults and one in a child.

There were two cases of histological proven tumors of the brain stem. Both were in children, one being a 4 year old colored female with glioblastoma multiforme, and the other an 8 year old white male with spongioblastoma unipolare.

SYMPTOMS

The incidence of various symptoms in this group of cases is shown in Table V. The symptoms are those of increased intracranial pressure and those produced by the effects of the tumor in its particular anatomical location.

TABLE V

SYMPTOMS AND THEIR INCIDENCE

Headache	55
Visual disturbances	38
Vomiting	35
Motor disability	33
Vertigo	20
Convulsions	15
Ataxia	15
Mental aberrations	14
Loss of consciousness	12
Sensory disability	11
Incontinence—bladder and rectum	10
Tinnitus	6
Personality changes	5
Aphasia	5
Impairment of hearing	4
Lethargy and somnolence	4
Weight loss	4
Fever	3
Insomnia	1
Visual hallucinations	1
Auditory hallucinations	1
Loss of libido	1

The time interval between the onset of symptoms and the seeking of medical advice varied from seven

days to 14½ years, averaging 11 months. Two cases were admitted because of complaints referable to other systems and the diagnosis of brain tumor was established during a diagnostic work-up.

Diagnostic procedures employed included the following:

Neurological examination
Skull x-rays
Visual field examination
Electro-encephalogram
Lumbar puncture
Pneumo-encephalogram
Ventriculogram

TREATMENT AND RESULTS

As shown in Table VI, the treated cases can be divided into three groups: first, the largest group, those cases treated by surgery alone; second, those treated by surgery and roentgen therapy combined; and finally, those treated by roentgen therapy alone.

TABLE VI

TREATMENT

	Cases		Known to Have Died
Cases treated by surgery alone	34)		
Cases treated by surgery combined with x-ray	12)	46	32
Cases treated with x-ray alone	7		4
Cases receiving no treatment	19		11
Total	72		47

Major surgical procedures were performed on 46 of the total of 72 cases. Fifty-eight surgical procedures were accomplished on these 46 patients and these are tabulated in Table VII. These figures do not include trephines which were done for diagnostic purposes. Of the 36 cases in which craniotomy was performed primarily, decompression was carried out at the same time in 25 cases.

TABLE VII
SURGICAL PROCEDURES

Decompression alone	5
Decompression with biopsy or aspiration of cysts	6
Craniotomy with total or partial excision of tumor	36
Decompression first, followed at interval by craniotomy (3 cases)	6
Tantalum cranioplasty	2
Excision cortical scar following craniotomy	3
Total surgical procedures	58

In the 46 cases which had operative procedures, there were 16 deaths in the immediate postoperative period, taking two weeks as an arbitary interval, and four deaths in the hospital at intervals longer than two weeks postoperatively. Follow-up data is not complete; however, the number of cases known to have died up to the present time is indicated in Table VI for each form of therapy.

The average survival time from the onset of symptoms to the time of death in those cases which were operated upon and subsequently died was one and a half years. In the total series of 72 cases, 47 deaths have thus far been recorded. The survival time from the onset of symptoms to death in the total of 47 deaths also averages one and a half years.

Twelve cases were treated by surgery in combination with roentgen therapy. The survival times are included with those treated by surgery alone, as the intervals did not vary appreciably.

Seven patients were treated with x-ray therapy alone. One of these was a 55 year old white male, diagnosed clinically as a case of craniopharyngioma, who died while being treated. Autopsy confirmed the diagnosis. Two interesting patients treated by x-ray alone were lost to follow-up. One, a 70 year old white female, had a pinealoma diagnosed by x-ray examination. The other, a 15 year old white female, with a history of convulsions for eight months, had a port-wine hemangioma of the face at birth. Her visual fields were constricted bilaterally and x-ray findings were indicative of an hemangioma of the left occipital lobe. The other four patients treated by roentgen therapy alone had pituitary tumors, all diagnosed by x-ray examination. One was a 24 year old colored male, with a two-year history of blindness, loss of libido and headache. On physical examination he had small external genitalia and sparse hair over the body. He was treated with x-ray therapy but died one week after completion of treatment. At autopsy, a large chromophobe adenoma of the pituitary was found.

Nineteen patients in the series received no definitive therapy in this institution. Six were those previously mentioned who were listed as having probable brain tumors, but who either refused diagnostic procedures and treatment or were referred elsewhere. Of these, one later returned after having had a craniotomy at another institution and died in this hospital. No histological diagnosis had been made at craniotomy and autopsy was not obtained. Among the remaining 13, there were two patients with pituitary adenomas diagnosed by x-ray who received no treatment. One of these patients, admitted because of cerebral concussion, had no symptoms of tumor, but by x-ray was shown to have marked erosion of the posterior clinoid processes and the posterior wall of the right orbit; treatment was refused. There were two untreated cases of histologically proven pinealoma. One was that of a 45 year old colored female, admitted originally for regulation of diabetes. Because of findings consistent with a brain tumor, ventriculograms were obtained. She died the following day and autopsy re-

vealed the diagnosis. The second was that of a 42 year old colored male who died the day after admission, and who was believed clinically to have a cerebellar tumor. At autopsy a pinealoma was found with an extension over the vermis of the cerebellum.

Another untreated case was that of an 11 year old colored male who was semistuporous on admission, with a stiff neck and probable papilledema. A lumbar puncture was done and the cerebrospinal fluid pressure found to be tremendously increased. Death occurred five hours after admission. At autopsy a craniopharyngioma was found with internal hydrocephalus and a marked pressure cone.

Three cases of glioblastoma multiforme received no treatment. One patient, suspected clinically of having a thrombosis of the inferior cerebellar artery with signs of cerebellar pathology, at autopsy was found to have a glioblastoma of the right frontal lobe with hemorrhage into the pons and rupture into the fourth ventricle. A second patient was suspected clinically of having a cerebrovascular accident. A third patient was admitted six days after having been hit on the head and about the body with a beer bottle. His complaints were drowsiness and headache and he was observed for possibility of head injury or hematoma. Glioblastoma multiforme of the right frontal and parietal lobes was found at autopsy.

A 24 year old colored female was transferred from another hospital because of the possibility of poliomyelitis and died one hour after admission. Postmortem revealed an astroblastoma of the left frontal lobe.

A 45 year old colored female was suspected of having a cerebral hemorrhage. A large spongioblastoma multiforme of the left parietal and temporal lobes with hemorrhage into the ventricle was found at autopsy.

An 8 year old white male, stuporous on admission, was deemed inoperable. Spongioblastoma unipolare of the pons was found at autopsy.

Two other patients, with obvious signs of brain tumor, were deemed inoperable and died, but no autopsy was performed.

SUMMARY AND CONCLUSIONS

Intracranial tumors as a group have carried a rather poor prognosis in this series. We have had a high incidence of glioblastoma and of other histologically aggressive types of glioma. Palliative decompression in these cases has been useful in relieving the patient from the agonizing symptoms of intracranial hypertension. It is our impression that x-ray treatment has afforded a worthwhile extension of postoperative survival in some cases. In one instance x-ray plus repeated operation resulted in a seven year span of useful existence after the first craniotomy.

X-ray alone has been the treatment of choice for pituitary adenomas. Decompression followed by x-ray has produced excellent results in several cases of pineaoloma. Cystic lesions, treated by aspiration with or without removal of the mural nodule, have done well.

The Medical College plans to develop in the near future a separate division of Neurological Surgery. While this specialty has made remarkable advances in many directions, the end results from the treatment of brain tumors leave much to be desired the country over. Newer developments, such as the use of radioactive isotopes, may improve the present rather dismal picture.

SOUTH CAROLINA PEDIATRIC SOCIETY

The annual business meeting of the South Carolina Pediatric Society will be held at the Murphy Guest House, 2300 N. Ocean Boulevard, Myrtle Beach, Wednesday, May 14, 6:00 P. M. This will be followed by a social hour (courtesy Mead Johnson and Co.), and dinner (dutch), for members and their wives.

PROGRAM, ANNUAL MEETING
SOUTH CAROLINA MEDICAL ASSOCIATION
OCEAN FOREST HOTEL, MYRTLE BEACH

MONDAY, MAY 12: Meeting of the Council

TUESDAY, MAY 13: House of Delegates

10:00 A. M.—Call to order

Report of Credentials Committee

Remarks by the President

Remarks by the President-Elect

Presentations of resolutions and recommendations (Written reports of officers and committee chairmen will have been sent to all delegates and will not be read before the House.)

Chairman of the Council

The Secretary

The Business Manager and Director of Public Relations

The Treasurer

The Editor of *The Journal*

The Chairman, Executive Committee, State Board of Health

Other Committee Chairmen

Recalling of proposed amendments to Constitution from the table

Presentation of resolutions by Delegates

12:30 P. M.—(Special order) Annual meeting, The Corporation South Carolina Medical Care Plan

1:30 P. M.—Recess until 9:00 A. M.

3:00 P. M.—Meetings of Reference Committees

(All members of the Association are urged to appear before the committees considering matters in which they are interested.)

WEDNESDAY, MAY 14: Recessed meeting House of Delegates

9:00 A. M.—Call to order

Reports of reference committees

12:30 P. M.—(Special order) Annual Elections

1:30 P. M.—Sine die adjournment

2.30 P. M.—Scientific Session

5:15 P. M.—Adjournment

8:30 P. M.—Entertainment in The Patio

THURSDAY, MAY 15:

9:00 A. M.—Scientific Session

12:30 P. M.—Luncheon Recess

Alumni Luncheon

2:30 P. M.—Scientific Session

4:45 P. M.—Adjournment

6:00 P. M.—Cocktails in the Ball Room

7:00 P. M.—Annual Banquet and installation of the President

Dr. John McSween, After-Dinner Speaker

THE SCIENTIFIC PROGRAM

WEDNESDAY, MAY 14

2:30 P. M.—"Humidification in Medical Practice"—Dr. S. F. Ravenel, Greensboro, N. C.

3:00 P. M.—"Accidental Poisoning in Children"—Dr. Julian P. Price, Florence

3:20 P. M.—Discussion

3:25 P. M.—"Prevention of Prematurity"—Dr. Frank B. Geibel, Columbia

3:35 P. M.—"Pathology of Prematurity"—Dr. H. R. Pratt-Thomas, Associate Professor of Pathology, Medical College of South Carolina, Charleston

3:45 P. M.—Discussion

4:00 P. M.—Intermission

4:15 P. M.—"Idiopathic Pericarditis"—Dr. Izard Josey, Columbia

4:35 P. M.—"The Mechanisms of Acid Base Balance of Clinical Significance"—Dr. L. C. Reid, Associate Professor of Physiology, New York University School of Medicine, and Professor of Experimental Surgery in the Postgraduate Medical School of New York University, New York

5:15 P. M.—Adjournment

THURSDAY, MAY 15

9:00 A. M.—Memorial Service—Dr. Paul K. Switzer, Union

9:15 A. M.—Symposium on Anesthesia

1. "Spinal Anesthesia"—Dr. W. T. Lemmon, Philadelphia
2. "Pentothal and Curare"—Dr. Chas. H. Poole, Spartanburg
3. "Nerve Blocks for Diagnostic and Anesthetic Purposes"—Dr. R. E. Edmondson, Anderson
4. "Inhalation Anesthesia"—Dr. J. M. Brown, Associate Professor of Surgery (Anesthesiology), Medical College of South Carolina, Charleston

10:45 A. M.—Discussion

11:00 A. M.—"Is the Medical Profession in the Process of Being Regimented?" — Dr. J. Heyward Gibbes, Columbia

11:30 A. M.—"The Physiologic Basis for Clinical Use of ACTH and Cortisone"—Dr. Hugh Smith, Jr., Greenville

11:50 A. M.—Discussion

12:00 N.—"Use and Abuse of Barbiturates"—Dr. W. G. Moorehouse, State Hospital, Columbia

12:20 P. M.—Discussion

12:30 P. M.—Luncheon Recess

2:30 P. M.—"Electroshock Therapy and Lobotomy Program in The State Hospital"—Drs. J. E. Freed and Edw. M. Burn, Columbia

3:00 P. M.—"The Role of the Kidney in Sodium and Potassium Excretion and Water Balance"—Dr. L. C. Reid, New York

3:30 P. M.—(Special Order) Presentation of the Presidents of the Woman's Auxiliaries of the South Carolina and American Medical Associations

3:45 P. M.—(Special Order) The President's Address—Dr. J. Decherd Guess, Greenville

4:15 P. M.—"Acute Pancreatitis—the Diagnosis and Treatment"—Dr. Vince Moseley, Professor of Medicine, Medical College of South Carolina, Charleston

4:35 P. M.—Discussion

4:45 P. M.—Adjournment

The Journal of the South Carolina Medical Association

EDITOR: Julian P. Price ---------- Florence, S. C.

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Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Original manuscripts, subject to approval by the Editor and the Editorial Board, are desired for publication in the Journal. They should be typewritten, double spaced, on 8½ x 11 paper. References should be complete, and only such as relate directly to statements quoted in the paper. Illustrations will be used as funds permit, or as authors are willing to bear the necessary increase in cost. Short original articles are preferred to long reviews.

Office of Publication: (In care of the Editor) ---------- Florence, S. C.
Subscription Price ---------- $3.00 per Year

APRIL, 1952

HOUSE OF DELEGATES

Modeled after the type meeting held in the American Medical Association and many of the state medical associations, adapted to our own needs by our President, Dr. J. D. Guess, our House of Delegates will attempt a new style of meeting this year at Myrtle Beach. For the first time we will have several Reference Committees to which all reports and resolutions will be referred for full discussion before they are finally presented to the House for action.

The modus operandi will be as follows: As soon as the House has convened, the presiding officer will appoint the reference committees—varying from five to seven in number, with each composed of five members. As each report of a committee is read it will be referred immediately to one of the committees. The same procedure will prevail for any special resolutions. All of this will take place on Tuesday morning. On Tuesday afternoon, and during the evening if necessary, the Reference Committees will meet. Any member of the Association, whether he be a delegate or not, is entitled to appear before the committees to present his views upon any given subject or to listen to the general discussion. After all who wish to present their views have appeared, the committees will go into executive session and prepare their reports. These reports may endorse, reject, or modify the original resolutions.

On Wednesday morning the reports of the committees will be presented to the House in full session where further discussion may ensue before the members vote on accepting, rejecting, or amending the recommendations.

Through this method ample opportunity will be given to every member of the House and of the Association to present his views upon a given subject—and yet the time of the entire membership of the House will not be taken up with a discussion of every item. It is a thoroughly democratic procedure and allows for much more latitude in debate than did our older method of having each resolution acted upon when it was presented.

Following the meeting this year, the delegates will be in position to decide whether this newer method of procedure is preferable or whether it is desirable to return to our former method of conducting the meeting.

SPEAKER OF THE HOUSE

One of the changes which will be proposed in the revision of our Constitution and By-Laws this year will be the creation of a new office—that of a Speaker of the House of Delegates. This is nothing new in medical organizations since most large organizations have an officer of this type, but it would be new for South Carolina.

It would be the duty of the Speaker to preside at all business sessions of the House of Delegates. He would appoint the reference committees, see that the business of the House is run according to parliamentary law and according to our own Constitution and By-Laws, he would refrain from participating in the discussion, and would vote only in case of a tie.

The advantage in having such an elected individual is that it would insure the House of having a presiding officer who was well versed in the handling of a meeting. Of necessity, he would have to be a good parliamentarian and one who was thoroughly grounded in the provisions of our own Constitution and By-Laws.

The disadvantage would be that it would deprive the President of the Association from presiding at the meeting—a privilege which some presidents might hold quite dear.

It will be up to the members of the House of Delegates to make the decision at this next annual meeting.

PAST-PRESIDENTS IN THE HOUSE OF DELEGATES

A question which we have heard discussed considerably this year and one which will be presented to the House of Delegates for decision at the coming

meeting in May will be "Should the past-presidents of the Association be ex officio members of the House of Delegates?" This custom has prevailed up to the present. Should it be modified or discontinued?

Without taking sides in the issue, we would like to present some of the arguments which we have heard expressed.

Those who favor allowing all past-presidents to continue to serve as members of the House of Delegates argue that these men have served the Association in an official capacity, they know a great deal of the workings of the Association, they are men of mature judgment, they are not interested in any personal advancement in the Association, and they serve as a source of knowledge and balanced judgment which the House needs.

Those who favor discontinuing the present custom of having past-presidents in the House argue that the House is a democratic body composed of elected delegates and it is unwise to have as many as twenty percent of the membership composed of men who are not elected and who are not responsible to their county societies for their actions, that the past-presidents through their long tenure of office and know-how tend to dominate the actions and activities of the House, that the House tends to become top heavy with older men with older ideas and thus puts a damper upon the younger men with their more fresh and vigorous ideas, that the past-presidents have had their day and that they should be glad to turn the reins over to others.

To continue or not to continue to have past-presidents in the House of Delegates—that is a question which will be discussed fully at our coming meeting. It would be well for the delegates to discuss the matter with their colleagues before coming to the meeting so that they will be in a position to vote more intelligently.

SOUTHERN PEDIATRIC SEMINAR

The thirty second session of the Southern Pediatric Seminar will be held in Saluda, N. C. from July 14 to July 26. From a small beginning this Seminar has now grown into what many have declared to be the best post-graduate course in pediatrics in the country. Last year for the first a third week was added devoted to instruction in obstetrics.

For those who want to find out what is new in pediatrics and obstetrics, for those who need to brush up on these two fields of medical practice, this course offers a unique opportunity. Those who desire more information are asked to communicate with Dr. D. L. Smith, Spartanburg.

A. M. A. ANNUAL MEETING

The annual meeting of the American Medical Association will be held in Chicago, June 9-13.

Chicago is not far from South Carolina and we would strongly urge that as many of our members as possible plan to attend the meeting this year. It is our feeling that every physician owes it to himself to attend at least one of these annual meetings and the meeting this June affords an excellent opportunity to do this. It not only gives one a mass of scientific information but also affords the privilege of meeting colleagues from every part of the country. It lifts one out of the small confines of his own practice and gives him a view of what is being done over the entire country. It is a stimulus which each of us needs to keep from getting into a rut.

If a sufficient number are interested it might be possible to secure a special pullman car in which all could go together. Those who are interested are asked to communicate with Mr. M. L. Meadors or the editor, immediately.

DEATHS

SAMUEL JACOBS SUMMERS

Dr. Samuel Jacobs Summers, 83, Cameron physician and farmer, died on February 26th, at his home. He had been in declining health for the past two years.

Dr. Summers attended the University of South Carolina and received his medical degree from the University of Maryland. He began the practice of medicine in Cameron with his father and practiced there until his health failed. In addition to his practice of medicine and various farming interests, he also had served two terms as senator from Calhoun County.

Dr. Summers is survived by his widow, four daughters and three sons.

THOMAS N. DULIN

Dr. Thomas N. Dulin, 81 died at his home near Clover on March 7th after several years of declining health.

Dr. Dulin was graduated from the Atlanta Medical College in 1892 and had practiced in his community for more than fifty years. He was an honorary member of the South Carolina Medical Association.

He is survived by a son and a daughter.

HAWKINS KING JENKINS

Dr. Hawkins King Jenkins, staff physician at the South Carolina Sanatorium at State Park died at the Columbia Hospital on the morning of March 16, at the age of 59.

A native of Charleston, Dr. Jenkins received his medical training at the Medical College of South Carolina, (Class of 1919). He had been at State Park for the past ten years.

Surviving Dr. Jenkins are his widow and two daughters.

NEWS ITEMS

BRODIE C. NALLE LECTURE

The first Brodie C. Nalle Lecture was delivered by Dr. Emil Novak of Baltimore, Maryland, on April 14, 1950, on "Indications, Limitations and Hazards of Endocrine Therapy in Gynecology." The second lecture was delivered by Dr. Samuel A. Cosgrove of Jersey City, New Jersey on April 27, 1951, on the subject, "The Clinical Management of the Toxemias of Pregnancy."

The third Brodie C. Nalle Lecture will be presented by the Brodie C. Nalle Fund of The Nalle Clinic Foundation on Friday, April 25, 1952, at 8:00 P. M. in the Ballroom of the Hotel Charlotte, Charlotte, North Carolina. The Ballroom provides a much larger space than has been available for the last two lectures, and seating should certainly be adequate and comfortable.

The speaker for this lecture will be Dr. Richard W. TeLinde of Johns Hopkins University School of Medicine, Baltimore, Maryland. His subject will be:

CARCINOMA OF THE CERVIX: RECENT ADVANCES IN DIAGNOSIS AND TREATMENT

The Eighteenth Annual Meeting of the American College of Chest Physicians will be held at the Congress Hotel, Chicago, Illinois, June 5 through 8, 1952. A scientific program covering all recent developments in the treatment of heart and lung disease is being arranged.

The Board of Examiners of the American College of Chest Physicians announces that the next oral and written examinations for Fellowship will be held in Chicago on June 5, 1952. Candidates for Fellowship in the College who wish to take the examinations should contact the Executive Secretary, American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Illinois.

Dr. R. Kyle Brown of Greenville serves as Governor of the College for South Carolina.

Mount Sinai Hospital of Greater Miami announces its Second Annual Seminar on Recent Advances in Diagnosis and Treatment to be held at the Delano Hotel, Miami Beach, May 22nd, 23rd, and 24th, 1952.

Eight outstanding lecturers from various parts of the United States will conduct the Seminar. The speakers include:

Dr. Joseph B. Kirsner, University of Chicago
Dr. Daniel C. Darrow, Yale University School of Medicine
Dr. Rachmiel Levine, Michael Reese Hospital
Dr. William Dameshek, Tufts Medical College
Dr. Robert Elman, Washington University School of Medicine
Dr. James H. Means, Harvard University
Dr. D. M. Bergenstal, University of Chicago
Dr. J. William Hinton, New York University

The subjects to be presented are:
Recent Advances in the Treatment of G. I. Diseases
Recent Advances in the Diagnosis and Treatment of Electrolyte Disturbances
Treatment of Diabetes
Recent Advances in Hematology
Recent Advances in Surgery
Recent Advances in Thyroidology

Registration fee is $20.00. There will be a banquet to which the wives are invited. Attendance at the banquet is optional. For interns and residents there is no registration fee.

Dr. John F. McLaughlin, Jr., has opened offices for the practice of general medicine at Meggett, S. C.

Dr. John K. Webb of Greenville was elected Vice President of the Tri-State Medical Association at the meeting held recently in Roanoke.

Dr. Robert Sumner of Rock Hill has been elected president of the York County Medical Society for the ensuing year. Dr. Carl P. Parker of Clover was elected vice president and Dr. Sam Lowe of Rock Hill, secretary-treasurer.

WOMAN'S AUXILIARY
SOUTH CAROLINA MEDICAL ASSOCIATION

President: Mrs. K. D. Shealy, Columbia, S. C. **Publicity Secretary: Mrs. Weston Cook, Columbia, S. C.**

TENTATIVE PROGRAM
of the
WOMAN'S AUXILIARY
to the
SOUTH CAROLINA MEDICAL ASSOCIATION
Twenty-seventh Annual Convention
Ocean Forest Hotel
Myrtle Beach, South Carolina
May 13, 14, 15

MONDAY, MAY 12—Auxiliary Committee Meeting with Council of Medical Association
President—Mrs. Kirby D. Shealy, Columbia
Pres.-Elect—Mrs. W. O. Whetsell, Orangeburg
Treasurer—Mrs. David A. Wilson, Greenville

TUESDAY, MAY 13—Finance Committee—
Mrs. J. L. Sanders, Greenville
Jane Todd Crawford Mem. Loan Fund—
Mrs. Alton G. Brown, Rock Hill
Student Loan Fund—
Mrs. Vance W. Brabham, Sr., Orangeburg

WEDNESDAY, MAY 14—A. M. Executive Board Meeting. Mrs. Kirby D. Shealy, president, presiding. Mrs. Richard F. Stover, Miami, Fla., Pres.-Elect Woman's Aux. to the Southern Medical Association, speaker.
P. M. Tea honoring Mrs. Harold F. Wahlquist, Minneapolis, Minn. President Woman's Aux. to the American Medical Association, and Mrs. Richard F. Stover. Dunes Country Club. All women attending convention invited.

THURSDAY, MAY 15—A. M. House of Delegates. Mrs. Kirby D. Shealy, President, presiding.
A. M. Program Meeting. Mrs. Harold F. Wahlquist, speaker.
A. M. Post Convention Board Meeting. Mrs. W. O. Whetsell, President, presiding.

CORRESPONDENCE

Dr. J. P. Price, Editor
Journal of the S. C. Medical Association
Florence, South Carolina
Dear Dr. Price:

The Board of Trustees of the Crippled Children Society of South Carolina again requests your assistance. Our 1952 Easter Seal campaign begins March 13 and continues until April 13.

Our Society provides services that supplement and extend but do not duplicate the work of other private or public agencies.

You will be interested to know that 91.7% of all Easter Seal funds raised in South Carolina stays in our state to assist our own handicapped persons.

Our state project is the cerebral palsy program. Over 409 appointments have been made for our cerebral palsy clinics alone during the past year.

County societies provide braces, special education, transportation to clinics and other needed services.

Please assist us by running an article in your magazine during the Easter Seal Campaign. Will you use a mat or electro? Enclosed is a postal card. Please check the material you prefer and return the card to our state office so that we may have it sent to you.

Thank you for helping us to lend a helping hand to crippled children and adults.

Sincerely yours,
C. W. Griffith
President

THE TEN POINT PROGRAM

M. L. MEADORS. DIRECTOR OF PUBLIC RELATIONS AND COUNSEL

1952 DUES PAYABLE

All members who have not paid the State Association dues for the year 1952 are reminded that these dues were payable January 1st, and that their payment is a requisite for membership in good standing and registration at the annual meeting. The secretaries of county societies are reminded that the By-Laws of the Association, Chapter IX, Section 11, require that dues of the members be remitted to the State Treasurer before April 1st. A number of the county societies have already paid their dues and those of others are coming in. Of course, dues will be accepted up to the date of the annual meeting or at the meeting. The entry and proper recording of information relative to the payment of the dues and preparation of membership cards, however, entail considerable work and with all of the other preparations necessary to be made immediately previous to the annual meeting, payment as far as possible in advance will expedite the handling of the details, and will be greatly appreciated. The necessity of collecting dues and preparation of membership cards at the time of registration delays the procedure considerably.

THE 1952 DIRECTORY

As this goes to press the proof of the 1952 Directory is being checked and it is expected that the completed Directories will have been mailed to all members of the Association well in advance of the appearance of this issue of the Journal.

Because of the large number of new members and the very extensive increase in the amount of work in the administrative office, as the result of the necessity of collecting, tabulating and remitting dues of the American Medical Association, as well as the State Association, during the past year, completion of the data for the Directory was delayed a few weeks longer than had been anticipated.

The new Directory contains the names of 1194 members of the South Carolina Medical Association. Practically all of these are listed twice, first in the alphabetical section and again in the geographical section where the listing is by towns and cities.

Of this number 144 are Honorary Fellows and are so indicated. 34 are in active service with the Armed Forces of the country and these are indicated by the letter (S) following their names. As in the past, the Directory contains, following the name of each physician, in the alphabetical section, the year of his birth, year of graduation from medical school and the type of his medical practice. All changes of address, concerning which the office had information, up to the very day of the return of the proof to the printer, were made, so that the Directory carries as accurately as it was possible to do so, the business addresses of the members of the Association.

Each member is entitled to one copy of the Directory without charge, the expense having been paid from dues and Journal subscriptions. Additional copies may be obtained from the Florence office at the price of $.50 each to members of the Association, and $1.00 each to non-members of the Association.

BLUE SHIELD PREPARES TO OFFER MEDICAL BENEFITS

For some time the Board of Directors of the South Carolina Medical Care (Blue Shield) Plan have been studying the advisability and possibility of adding medical services in the hospital, to the benefits provided subscribers and their dependents under the Blue

Shield contract. At the regular quarterly meeting on March 23rd, the Board adopted the form of a proposed contract providing for medical benefits. The new provisions must be approved from an actuarial standpoint on the basis of the wide experience of other plans offering the same types of service, and by the Insurance Department of the State of South Carolina. From the inquiry which has been made by the Executive Director and the Actuarial Committee of the Board of Directors, however, it is believed that approval from both those sources is highly probable and that the medical benefits can be made effective within the very near future.

The need for the addition of medical benefits has long been felt, both from the standpoint of its effect in making the contract more attractive to the subscriber, and from the viewpoint of the participating physician. The Plan has been subjected to some criticism from time to time because it was alleged to have provided for the payment of fees only to surgeons. Actually, this is not true, since the Plan has at all times provided benefits for minor surgery, much of which is performed by general practitioners in the office, clinic or hospital, and likewise, has at all times provided obstetrical benefits, the major portion of obstetrical service, at least in the small communities, being performed by general practitioners. The pediatricians and internists are perhaps among those who have had least opportunity to participate.

On the other hand, it has been the wish of the officials of the Plan ever since its beginning, and this was announced at the time, to add medical benefits as soon as the financial structure would permit. It is a favorable commentary on the progress and development of the Plan in the two years of its existence that apparently the time has now arrived when such benefits can be added to the provisions of the contract.

Under the terms of the new contract which has been approved by the Board, the Plan will pay the participating physician for medical services, the amount of his regular charge, not exceeding, however, $4.00 per day, for each day on which the physician visited his patient while in the hospital. The payments will not begin until the third day of the patient's stay in the hospital and will be limited to a maximum of 28 days in any one contract year. Medical, like surgical services, will not be covered during the first 12 months of membership for conditions known by the subscriber to exist on the date of application for membership.

Another addition made to the contract is the provision for payment for anesthesia when administered by a duly licensed doctor of medicine who is not the physician in charge of the case, and who is not an employee of the hospital. The Plan will pay up to $15.00 for such services during any one hospital admission, for anesthesia administered in connection with surgical or obstetrical cases.

The amount of the concurrent raise in subscription rates is nominal in view of the extent of the additional benefits being offered. The new rates, if the contract is put into effect, will be, on a monthly basis, $1.05 to the individual subscriber, $2.35 for a widow or widower and unmarried children under nineteen, and $2.75 for the family contract.

It will still be possible for subscribers to secure the old type contracts at the same rates, providing for only surgical and obstetrical benefits. No present subscribers, therefore, will be faced with the necessity of either paying a higher rate for his Blue Shield contract, or having it discontinued.

The progress of Blue Shield has been good. It has improved with the wider understanding and more substantial support of the Plan on the part of the doctors. With the additional benefits for medical service and anesthesia it would seem that the Plan now warrants, if it did not before, the whole-hearted support and cooperation of every member of the State Medical Association. Actually, more than 75 per cent of the membership are participating physicians in the Plan at the present time and a considerable number of others are receiving its benefits indirectly, through payment to their patients who are Blue Shield subscribers, of the fees for surgical and obstetrical services as provided in the fee schedule.

GRIEVANCE COMMITTEES

The Council on Medical Service of the American Medical Association in January, released a progress report on the development of Medical Society Grievance Committees. Last year a Committee headed by Dr. Roderick MacDonald, made its report to the House of Delegates, of the State Association recommending and setting forth a proposed plan of organization and conduct of such a committee in South Carolina. Action was deferred until the annual meeting this year, in order to afford an opportunity for the members of the Association to become better informed on the purpose, and method of operation of such committees. The matter is scheduled for action at the meeting in May. (The Columbia Medical Society, and possibly other County organizations, already have such a committee).

The January Report of the Council on Medical Service, contains valuable information, which, in view of the foregoing, should be of special interest to the members of the South Carolina Medical Association.

Following are extracts of some of the more important information contained in the report, copies of which will be furnished the members of the House of Delegates prior to the annual meeting.

"The House of Delegates at its Washington, D. C., meeting in December, 1949, adopted a resolution urging that all constituent medical associations have grievance committees to hear complaints from the public. Attention was drawn to the success of such committees already established, and it was proposed 'that all constituent associations adopt comparable programs.'

"It seems reasonable to assume that all of the constituent medical associations have in their Constitutions or By-Laws some provision for disciplining physicians violating the Principles of Medical Ethics.

such provision would, of course, provide or at least allow for the hearing of complaints. This has probably been sufficient in past years, but with the medical profession moving positively into the public eye through its public education and public relations efforts more adequate steps for hearing and settling complaints from the public have become necessary.

"Today, the problem is not simply one of disciplining members but is one of improving relations with the public, of clarifying misunderstandings, of adjusting differences so that individual physicians and the profession itself may continue to retain the confidence of the American people. It is in accomplishing these objectives that grievance committees, properly handled, can be of most assistance. . . . .

"In December, 1950, the Council on Medical Service issued a report on 'Medical Society Grievance Committees—Their Development and Function.' At that time the Council listed 34 constituent medical associations as having such committees. A little more than a year later the number of grievance committees has increased to 42, including committees in the District of Columbia and Hawaii. In addition, 4 state associations are considering the establishment of such committees, leaving but 4 state associations without committees either in operation or under consideration. . . . .

"New York, North Dakota, Oregon, and South Carolina are reported to be considering the establishment of grievance committees.

"Additional data are available on two of these states: In New York, the state association not only is considering the creation of a state committee but also has made a written recommendation to each component society that it set up a local committee to handle grievances.

"In South Carolina, a planning committee has set up proposed amendments to the society by-laws to establish a committee. These are being publicized to the members and will be voted upon in 1952. The committee proposed for South Carolina would consist of the 5 immediate past presidents of the association and whatever members the Council sees fit to add. The committee would be of the grand jury type, not the judicial; it would supervise and recommend action, prefer and prosecute charges against the members. No member of the committee would act on a case from his own component society. The committee would accept both verbal and written complaints and would have the power to require the presence of any member of the society before its investigating group. . . . .

"It is apparent that the question of grievance committees has been thoroughly considered by the great majority of the constituent associations. According to present reports, only 8 states have no program in operation to handle grievances on a state-wide basis, either through a special committee or through one of the associations' other committees. Of these 8, 1 has set up rules and regulations for such a committee and will vote on them in 1952; 3 are studying the question.

"Of the remaining 4 states, at least 3 have definitely considered the pros and cons of the issue; 2 have left the function in the hands of local societies, and one has decided to postpone formation of such a committee. Thus, so far as the state associations are concerned, the situation seems to be well in hand. . . . .

"The most popular title is 'Grievance Committees', probably because the term appears in the resolution of the House of Delegates, in December 1949, urging that such committees be formed. However, many other names are in use and discussion continues concerning the possibility of a more appropriate title. The statewide committee in Indiana, for example, changed its title from 'Grievance Committee' to 'Committee on Patient-Physician Relations' in December 1951. . . . .

"The effectiveness (success) of any committee dealing with the delicate problems involved in settling complaints and grievances must necessarily depend to a great extent upon the personnel make-up of the committee: How many members? How long should the members serve? How should they be selected? These are important questions and are answered in part in the following paragraphs. . . . .

"Jurisdiction: Grievance committees are usually authorized to hear and investigate complaints concerning the professional conduct and ethical deportment of individual physicians and to attempt amicable adjustment. For the most part their authority is limited to arbitration and does not include authority to discipline any physician. Where disciplinary action seems necessary all evidence is usually submitted to the Council or proper judicial authority.

"In a number of instances, however, the committee may not only refer the case to the proper judicial body, but may also prefer charges and prosecute as well. In at least one state, the decision of the committee is final and is so understood by both parties before a hearing is scheduled.

"In some states, component societies will not defend in court any member who does not abide by the committee's decision and, in at least one state, county committee members have testified in court for the patient in such a case.

"A few states limit the jurisdiction of their grievance committees to cases referred to them by the county medical societies, thereby acting as a sort of court of appeals. However, even in these states the committee may have original jurisdiction in cases of alleged grievances originating in areas where there are no county societies or where a county grievance committee is not functioning.

"Methods of Receiving Complaints: The majority of the grievance committees hear complaints from any source—physicians, organizations, or the general public, although a few prefer county societies to screen all cases first. The Welfare Committee of the Idaho association, for example, has stated that complaints can be handled more efficiently by the component society concerned and has recommended the formation of welfare committees by all component societies.

However, in most states complaints may be made direct to the state committee as well as through a local group.

"All committees accept written complaints, but only a few will also accept verbal complaints. Several committees are authorized to initiate investigation when they feel it is justified, regardless of whether or not a complaint has been filed.

"Reports and Records: Records of hearings are kept by almost all of the committees, and all make some reports on their activities to the state Council or House of Delegates or both. The records of committee hearings and meetings range all the way from complete transcripts to simple listings of the number of cases handled and settled. . . . .

"About half of the state grievance committees reporting stated that the committee and its functions had been publicized. The extent of such publicity was limited in many instances to an announcement story at the time the committee was established. Others continue to publicize the existence of the committee as well as the results of the committee's activities. A few committees expressed the opinion that publicity would encourage ill-founded and nuisance complaints or might be looked upon as a defensive action on the part of the association. Some associations are still considering announcing the service generally, although it appears that a number of them would prefer to handle publicity through the local societies and thus, to some extent, screen the complaints received. Since many of these committees have been in operation only a short time, they have not yet decided whether they will issue annual reports to the public, although several are considering this method.

"The reasons for publicizing a grievance committee are perhaps best summed up by the Massachusetts Medical Society. When the first publicity was given to the Committee on Ethics and Discipline in June, 1950, the Society's News Letter explained the new policy with the following words: ' . . . Although this Committee has existed for some three-quarters of a century, the public has never been properly informed of the extent of our self-regulation. Publication of our Committee's existence is made in a sincere effort to improve our relations as a profession with the public . . . This action is not an apologetic approach. It is intended to correct and eliminate any existing abuses and to furnish a means of ending much malicious rumor and gossip that have brought untold harm to our standing in the community. . . . It is expected that this effort will abort considerable malpractice litigation and will furnish protection against cranks. . . . The ethical physician has nothing to fear. . . . The relatively few of our profession who abuse privilege should soon fall into line. . . . Although no disciplinary action can be imposed by the Society on physicians who are not members, the publishing of the numbers of such physicians involved in complaints should serve to point up the ethical and professional standards required of our members . . . . '

"The public press has generally approved the publicizing of grievance committees. The Tulsa Tribune, in an editorial printed in May 1949, praised the Oklahoma State Medical Association for the creation of a grievance committee. In part, the editorial said: 'We applaud the public announcement of the names of members of the statewide committee. . . . Often professional societies name grievance committees but keep the names secret, sometimes even from the members, and little good comes from the move even when it is sincere.'

"As this editorial points out, the public can make little use of a service if it does not know that the service exists.

"The information contained in the foregoing pages is ample evidence that the medical profession has followed through on the recommendations of the House of Delegates concerning the establishment of committees to hear complaints from the public. Forty-two constituent medical associations have developed machinery and methods for handling such grievances; four associations are in process of developing such programs; and two associations are leaving the handling of grievances to the component societies. . . .

"Actually, a review of available data indicates that the number of complaints is extremely small; furthermore, only a very small proportion of the number of complaints received represents justifiable grievances against physicians.

"Nevertheless, a committee is valuable even though few complaints are brought before it. It demonstrates the medical profession's willingness to discuss problems of medical care with the public. Its very existence is a deterrent to those members of the profession whose individual actions might do harm to the profession's reputation. It is an instrument for bettering the profession's relationship with the public and for demonstrating anew the physician's concern for the public welfare. When it has been made clear to individual physicians and to the public that the profession is no more in sympathy with those members who ignore their professional responsibilities than are those who are exploited, the activity of grievance committees will be reduced to a minimum. Their need remains, however, as a reminder to physicians 'to do unto others as you would have others do unto you'."

ASSOCIATION HAS MANY NEW MEMBERS

The South Carolina Medical Association during the past year has acquired a large number of new members, most of them, of course, young men, just completing their training and internship. The addition of vigorous new growth is always a healthy sign, whether for a plant or for an organization. It speaks well for the Association, and likewise for the new members who affiliate themselves with it. It implies general satisfaction with the progress being made by the organization, recognition of its value, and willingness to cooperate in increasing its potentialities. Every report from a county society of the payment of dues of its members includes one or more new ones.

The general offices of the State Association in Florence are ready and anxious to extend any possible type of assistance to these new members in helping them to become familiar with the Association and its activities, its obligations and responsibilities. A letter or card addressed to the office, 120 West Cheves St., Florence, S. C., will secure information concerning any of the activities in which a new member may be interested.

All the new members, particularly the younger ones, and especially now that medical services are about to be included in the contract, should investigate the benefit to themselves, individually, and to their patients of their participation in the South Carolina Medical Care Plan. This, the Blue Shield Plan, is the doctors' own organization, initially capitalized by the State Medical Association and operated by the physicians on a nonprofit basis to encourage the enrollment of as many people as possible for voluntary insurance. *Every satisfied individual covered by voluntary hospital and health insurance is one less advocate for compulsory health insurance.*

THE ESSAY CONTEST

Response to the invitation to students in the schools of South Carolina to participate in the Essay Contest sponsored by the State Medical Association was very good. The contest was conducted on a National scale by the Association of American Physicians and Surgeons, the subject being, "Why the Private Practice of Medicine Furnishes This Country With the Finest Medical Care."

This organization has conducted such contests for six or seven years but this is the first time that the South Carolina Medical Association has participated. Two years ago, the State Association organized and conducted a contest on its own and, rather surprisingly, the response at that time appears to have been considerably better than this year. Probably the explanation is in the fact that most students considered their chances of winning in a National contest too small to warrant the time and effort involved in participating.

On the other hand, this would seem to have been offset by the fact that although the three best essays by pupils in the State were submitted for judging in the National contest, their writers will be awarded prizes by the State Association. In addition, several of the county societies offered prizes locally to the best two or three essays by pupils in the schools of the respective counties.

Another, and perhaps the real explanation for the fewer number of essays received at the office of the State Association, is in the fact that some, at least, of the counties which offered prizes locally, sent in to the State office only the three essays adjudged best in their counties. We are therefore, without accurate information as to the total number of essays submitted by pupils throughout the State. In view of this fact—that some of the counties submitted to the State office only the two or three essays adjudged best locally—it is probable that actually the total number of students participating was approximately as large as two years ago.

The number of essays received in the office of the State Association for judging in the State Contest, was 49. These are in the process of being judged and when this appears the three best will have been forwarded to the Chicago office of the Association of American Physicians and Surgeons, on or before March 31st. The writers of these three essays will be awarded prizes by the South Carolina Medical Association, of $100, first, $50, second, and $25, third prize. The winner will be invited to go to Myrtle Beach as the guest of the Association, and receive the award at some appropriate time in the proceedings of the annual meeting.

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TEN POINT PROGRAM
OF THE
SOUTH CAROLINA MEDICAL ASSOCIATION

1. Cooperation

To promote closer cooperation and better understanding between all agencies, groups and individuals concerned with providing and improving medical care for the people of South Carolina.

2. Extension of Medical Care

To study constantly the need and availability of medical care in each county of the State and in the State at large.

To promote plans for providing or improving medical care where is a need, particularly in the rural areas.

3. Pre-Paid Hospital and Medical Care

To make voluntary pre-paid hospital and sickness insurance available to all the people of the State (through Blue Cross, Blue Shield, and commercial insurance policies), and to promote the widespread purchase of such insurance.

4. Care of Indigent

To work with local county and state agencies, and with philanthropic organizations, toward securing good medical care for the indigent.

5. Public Health

To support the South Carolina State Board of Health in its broad program of preventing diseases and of safeguarding the health of our people.

6. Health Councils

To support the State Health Council in its announced program. To sponsor the formation of a County Health Council in every county of the state, and to encourage our members to support and to work with these organizations.

7. Hospitals

To promote the expansion of present hospital facilities and the building of new hospitals—where there is a definite need.

To strive for highest standards of professional care in the hospitals in the State.

8. Medical Colleges

To support the Medical College of the State of South Carolina and to bend our efforts toward keeping its standards of education on a par with other medical colleges throughout the country.

To promote good nursing education and good nursing care throughout the State.

9. Education of the Public

To acquaint the citizens of the State with regard to the problems of medical care in existence today, to inform them as to what is being done to solve these problems, and to advise with them as to further plans for securing better health and better medical care for the people of South Carolina.

10. Political Medicine

To prevent political control or domination of medical practice or of medical education.